



Borough of Southend-on-Sea.

ANNUAL REPORT

ON THE

HEALTH OF THE BOROUGH OF SOUTHEND-ON-SEA

FOR THE YEAR 1904,

BY

J. T. C. NASH, M.D., M.S., D.P.H., ETC.,

MEDICAL OFFICER OF HEALTH FOR THE BOROUGH

AND

MEDICAL SUPERINTENDENT OF THE BOROUGH SANATORIUM.

SOUTHEND-ON-SEA :

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“Communicable disease is the greatest cause of death save one,
“and that is ignorance, which is the chief cause of disease.”

DR. HERON.

TO THE HEALTH COMMITTEE.

MR. CHAIRMAN AND GENTLEMEN,

I beg to submit my Annual Report dealing with the Health and Sanitary conditions of the Borough of Southend-on-Sea during 1904

The statistics embodied in this report require special consideration. Some of them, such as the low incidence of notifiable zymotic disease, and a comparatively low death rate give cause for congratulation, while others such as the infantile mortality give cause for reflection and decisive action. The Town Council have in my opinion made an important step in sanitary reform (which will play a large part in the future reduction of infantile mortality) in the decision come to last autumn to erect a Refuse Destructor. As it will be impossible for this to be installed before the coming summer, it is to be hoped that some effective makeshift will be in working order before the fly season commences this year.

The diminution of Typhoid Fever during 1904 is a matter of special congratulation. Instead of, as hitherto, a Typhoid Fever incidence and death rate, three or more times that of the rest of the County—Southend during 1904 had an incidence and death rate, less than half the average for the County as a whole during the years 1892-1903.

The statistics for the Borough Sanatorium are also remarkable, and extremely satisfactory.

As to Diphtheria, this disease has shown a tendency to run an epidemic course in some private schools in the Borough on several occasions during the year—but has been checked by strenuous effort.

My labours in this direction may be realised to some extent when I mention that I have examined in the laboratory, during the year, no fewer than 569 swabs submitted by doctors or taken by myself from suspected persons or contacts, with the object of assisting early diagnosis, and thus preventing the spread of the disease. An additional 242 swabs were examined in connection with convalescent patients from Diphtheria in the Sanatorium before discharge.

I again have much pleasure in bearing witness to the loyal assistance of the whole of my staffs, both at the Health Department and the Borough Sanatorium. Both staffs have reason to be proud of their records for 1904 as may be seen by reference to the Annual Summary prepared by Mr. Whur, the Chief Inspector of Nuisances, and to my remarks on the Sanatorium embodied in this report. Outside my own Department, I should like to acknowledge the courteous collaboration of the Town Clerk, the Borough Engineer and Borough Accountant in matters common to our respective offices.

The Health Committee has accomplished good solid work during the past year. The careful attention given to every matter it has been my duty to bring before the Committee commands my sincere acknowledgment.

I beg also to gratefully acknowledge the confidence placed in me by the Committee and Council. The appreciation of my endeavours to serve the health interests of the Borough, so kindly expressed by the Chairman of the Committee, and by some other members of the Council is a further source of encouragement. In serving the best interests of the Borough, we must necessarily at the same time serve the interests of the nation at large, and of its Empire capital. The Council and its officers have thus a high ideal before them.

I have the honour to be, Mr. Chairman and Gentlemen,

Your obedient Servant,

J. T. C. NASH, M.D., M.S., D.P.H.

February, 1905.

Medical Officer of Health.

BOROUGH OF SOUTHEND-ON-SEA.

Health Committee :

Mr. COUNCILLOR ALLEN (Chairman).

THE MAYOR (Mr. Councillor Loury, J.P.)

Mr. COUNCILLOR BARKER,

„ „ CRAIG,

„ „ DOODY,

„ „ KING,

„ „ LEANEY,

„ „ NEWITT,

„ „ RICHARDSON,

„ „ WRIGHT, J.P.

Town Clerk :

Mr. W. H. SNOW.

Deputy Town Clerk :

Mr. A. PARTINGTON.

Borough Engineer :

Mr. E. J. ELFORD, C.E.

Honorary Consulting Medical Officer of Health :

Mr. A. CLOUGH WATERS, M.B., B.S., J.P.

Matron of Sanatorium :

Miss THOMPSON.

Officials of Health Department :

Chief Inspector of Nuisances W. WHUR, A.S.I.

Assistant „ E. W. PENN, A.S.I.

Assistant „ F. W. MAYNARD.

Clerk - - - F. T. WEBBER.

Medical Officer of Health :

J. T. C. NASH, M.D., M.S., D.P.H.

BOROUGH OF SOUTHEND-ON-SEA.

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SITUATION—Latitude $51^{\circ} 32'$ to $51^{\circ} 34'$
 East Longitude $3^{\circ} 39'$ to $3^{\circ} 45'$

ELEVATION—Varies from sea level to 125 feet above ordnance datum.

SOIL—The surface formation is variable, consisting chiefly of brick earth, river gravel and London clay.

STATISTICAL SUMMARY.

Acreage	...	...	...	...	5,172
Census population, April, 1901	...	...	...	...	28,857
Population estimated to the middle of 1904	...	...	...	...	41,944
Average number of persons per house	...	...	...	...	5.3
Density of population per acre, 1904	...	...	...	...	8.1
Births	{	Males ... 492		Total	1007
		Females ... 515			
Annual rate of Births per 1,000 inhabitants	...	...	...	...	24.01
Total Deaths	{	Residents within the Borough 566			
		„ outside „ 30			622
		Visitors dying in public institutions 26			
Nett deaths after deducting visitors	...	...	...	...	596
Nett annual rate of mortality per 1,000	...	...	...	...	14.20
Excess of registered births over deaths of residents within the Borough	...	...	...	...	441
Infantile mortality	...	...	...	...	177.75
Rainfall for the year 1904	...	...	...	...	18.76 inches
Rain fell on	...	...	...	...	130 days
The greatest rainfall month was July	...	...	...	...	2.74 inches
The greatest rainfall in 24 hours was on July 27th,	...	...	...	...	1.60 inches
viz.	...	...	...	...	0.58 inches
The least rainfall month was April	...	...	...	...	6 days
The month with fewest wet days was April	...	...	...	...	18 days
„ most „ January	...	...	...	...	20.16
Average annual rainfall for previous 13 years (1891–1903)	...	...	...	...	138 days
Average number of days of rain per annum for period 1891–1903	...	...	...	...	1.40 inches
Deficiency of rainfall during 1904 as compared with average for 1891–1903	...	...	...	...	£274,677
Rateable Value of the Borough 1904	...	...	...	...

The following table is drawn up to make a comparison between Southend-on-Sea, and other Urban Districts, and England and Wales as a whole for the year, 1904 :—

	Annual Rates per 1000 living.			Infant mortality.
	Births.	Deaths from all causes.	Deaths from seven chief Epidemic Diseases.	Annual Death Rate of Infants under 1 year per 1000 Births.
England and Wales ..	27·9	16 2	1·94	146
Rural England and Wales	26·8	15·3	1·28	125
76 Great Towns	29·1	17 2	2·49	160
142 Smaller Towns ..	27·5	15·6	2·02	154
Southend-on-Sea	24·0	14·2	2 24	178

But for the excessive mortality from infantile diarrhœa, Southend would have enjoyed a very much better position than is shown in the above table ; though even as it stands, the Borough of Southend-on-Sea shows a smaller general death rate than even rural England and Wales during 1904.

The seven chief zymotic diseases are Small Pox, Scarlet Fever, Measles, Whooping Cough, Diphtheria, Typhoid Fever, and Diarrhœa.

In all of these except diarrhœa, Southend has exceptionally low zymotic death rates, as is seen on reference to the following table :—

SOUTHEND-ON-SEA, 1904.

Zymotic Diseases.	Death rate per 1000 inhabitants.
Measles	0·07
Whooping Cough ..	0·12
Diphtheria (including Membranous Croup) ..	0·04
Typhoid Fever	0·04
Scarlet Fever	0·00
Small Pox	0·00
Diarrhœa	1·97

Vital Statistics.

Population.

As the Borough of Southend-on-Sea is increasing so rapidly that the ordinary methods of estimating the population by logarithmic calculations, based on the Census Returns of 1901 and 1891, or from the average birth rates for a series of years, would be altogether misleading, the Health Committee, on my advice, ordered a Census of Houses in the Borough to be taken in the mid-year of 1904. I accordingly arranged with Mr. Hawtree (who had performed a similar duty some years ago) to undertake this duty.

The figures given by Mr. Hawtree are as follows :—

Ward.	Occupied Houses.	Unoccupied Houses.	In course of Erection.	Lock-up Shops.
North	3,259	152	212	7
East	2,137	93	91	102
West	2,518	157	141	30
TOTAL ..	7,914	402	444	139

Calculating on the Census (1901) figures of 5·3 persons per house, the mid-year population of the Borough of Southend-on-Sea in 1904 was 41,944.

That the above estimate is as accurate as possible is corroborated by the figures returned by the Dust Inspector, who made a return of the occupied houses visited at the end of June, 1904.

The population is distributed in the Wards of the Borough as follows :—

North Ward, 17,253 ; East Ward, 11,326 ; West Ward, 13,345.

Though involving additional labour, Mr. Hawtree kindly renumbered for me the houses along the dividing-lines of the ecclesiastical parishes, so that I have been able, for the first time, to have a fairly accurate estimate of the mid-year population of each parish, as well as of each Ward.

I calculate the mid-year parish population as follows :—

St. John's, 13,817 ; St. Albans, 11,570 ; Southchurch, 2,555.
St. Mary's, 5,247 ; All Saints, 8,756 ;

The first four Ecclesiastical Parishes are included in the Civil Parish of Prittlewell, which therefore has a population of 39,389.

At the National Census of April 1st, 1901, the populations of Prittlewell and Southchurch Civil Parishes respectively were :—

Civil Parish of Prittlewell, 27,245	} Total, 28,857.
„ „ Southchurch, 1,612	

The comparative figures for June 30, 1904, are :—

Civil Parish of Prittlewell, 39,389	} Total, 41,944.
„ „ Southchurch, 2,555	

In the $3\frac{1}{4}$ years which had elapsed since the National Census the population of the Borough as a whole had increased by 45 per cent., while that of the parish of Southchurch had increased by about 60 per cent.

Acreage and Density of Population.

The area of the Borough is 5,172 acres, giving a density of population of 8.1 persons per acre, as compared with 7.19 in 1903 ; 5.76 in 1901 ; and 4.36 in 1898.

Births.

Although a decreasing birth-rate is evident, the number of births registered in the Borough of Southend, for the first time in its history, reached a total of four figures in 1904—the registered number being 1,007 births, as compared with 935 in 1903, 839 in 1902, and 781 in 1901.

Of these 1007 births 492 were males, and 515 females. The birth rate was 24·01 per 1,000 inhabitants, as compared with 25·07 in 1903, 25·01 in 1902, 26·21 in 1901, and with an average of 26·10 during the preceding ten years. [The birth rate for England and Wales for 1904 is given as 27·9 by the Registrar-General.] In Southend, during 1904, 32 births were illegitimate, 13 male and 19 female, forming 3·17 per cent. of the total number of births.

It is rather usual to lament a decreasing birth rate, but in view of the enormous yearly addition to the population of the world, which hitherto has been increasing almost in geometrical ratio, it becomes a question whether a decreasing birth rate is not after all a matter of congratulation for posterity.

The natural increase of population in the Borough during 1904 was 411. By “natural increase” is meant the excess of births over deaths.

The estimated actual increase of population which includes besides the “natural” increase, the estimated excess of immigrant residents over emigrant was 4,661 in 1904, as compared with an estimated increase of 3,476 during 1903.

Deaths.

The total number of deaths registered in the Borough during 1904 was 592. Without correction this would give a death rate of 14·11.

By eliminating the deaths of 26 non-residents (that is persons brought into the district on account of sickness or infirmity and *dying in public institutions* in the District) the number of deaths registered in the district is reduced to 566.

To these must be added 30 deaths of residents which occurred in public institutions outside the district. Thus we get 596 as the nett deaths belonging to the district.

This number gives a nett death-rate of 14.20 for 1904. The death rate for England and Wales for 1904, was 16.2.

The rates in the immediately preceding years in Southend were 11.88 in 1903 ; 13.29 in 1902 ; 16.84 in 1901 ; 14.44 in 1900.

During 1904 there were registered the deaths of 139 persons upwards of 65 years of age, that is 23.3 per cent. of the total deaths.

180 deaths or 30.2 per cent. of the total were under one year of age.

The large number of deaths among infants during August, 1904, is what chiefly accounts for the increased death rate as compared with 1903. This formed the subject of a special report on epidemic diarrhoea which I laid before the Town Council in September last, and will be referred to again in this Report under the heading of Infantile Mortality.

The number of uncertified deaths during the year was 31, compared with 29 in 1903, 24 in 1902, 22 in 1901, 27 in 1900.

Infantile Mortality.

This is an important index of the sanitary conditions of a district or sub-district. It is the proportion of deaths occurring among infants under one year per 1,000 births. Southend does not stand well in the matter of infantile mortality. In a town so well situated ; of modern growth ; with no actual slums ; with no very congested areas ; with the affected districts well drained and sewered, and with good arrangements for the collection of house refuse ; infantile mortality ought not to be excessive. What are the actual figures ? In 1904 there were registered in the Borough 179 deaths among infants under 1 year of age, and the death of one infant belonging to Southend was registered as having occurred in the Union Workhouse, Rochford. 180 infant deaths gives an infantile

mortality figure of 178·74 as compared with 119·78 in 1903 ; 100·11 in 1902 ; 179·25 in 1901 ; 182·40 in 1900 ; 184·17 in 1899 ; 170·81 in 1898. The infant mortality for England and Wales during 1904 was 146.

With the exception of 1902 and 1903 the figures for Southend are excessive for a town so favourably circumstanced. It is imperative that the reasons should be diligently sought, and when recognised should be determinedly dealt with.

The certified causes of Deaths of Infants under 1 year of age for 1904 and previous years, are as follows :—

		1896	1897	1898	1899	1900	1901	1902	1903	1904
{	Digestive Diseases ..	11	35	31	44	52	21	16	19	30
	(including Enteritis)									
{	Diarrhœa	18	12	20	24	15	27	5	6	68
	Premature Births ...	17	16	15	20	30	21	21	18	28
	Respiratory Diseases ...	12	13	8	18	17	22	10	26	12
	Convulsions & Nervous Diseases ...	8	4	11	11	10	12	10	14	18
	Tubercular Diseases ...	2	1	6	1	7	12	5	6	8
	Measles	4	0	4	0	1	6	0	1	0
	Whooping Cough ...	0	6	3	0	1	13	5	6	4
	Scarlet Fever ...	0	0	1	0	0	0	0	0	0
	Syphilis	0	0	1	0	10	0	1	6	2
	Found Dead ...	0	0	1	0	0	0	1	0	1
	Over-laying ...	1	1	0	1	2	0	0	0	0
	Erysipelas ...	0	0	1	0	0	0	1	0	0
	Diphtheria ..	1	0	0	0	0	1	0	0	0
	Disorders of Parturition	0	0	0	0	0	1	2	1	1
	Accidents ...	0	0	0	0	0	1	1	1	0
	Rickets ...	0	0	0	0	0	0	0	3	1
	Other Causes ...	0	0	1	2	0	4	6	3	5
	Uncertified ...	0	0	0	0	0	0	0	1	2

On making a close inquiry into the facts it is evident that the hot season—the month of August in particular—is the deadly time of year for infants under twelve months of age. Why is this? Undoubtedly because of Infantile Diarrhœa.

In my Annual Report for the year 1903 (p. 16) I referred to “the terrific infantile mortality associated with hot dusty summers,”

and I gave three chief reasons why the wet summers of 1902 and 1903 produced so marked and favourable a reduction in the infantile mortality as compared with previous years. They were (1.) The frequent and thorough washing away of dust-containing organic debris from our streets, and the continued wetting of any collections of organic refuse. (2.) The destruction or inhibition of flies, which do not flourish in wet and chilly weather. (3.) The inhibition of rapid bacterial growth in milk owing to the coolness of the atmosphere in a wet season. I sounded the warning note that should a dry hot summer come again we should again experience a high infantile mortality unless the teachings of our previous experiences were remembered and acted upon.

The municipal sanitary lessons I tried to enforce were :—

- (1) *The necessity during dry weather of frequent and thorough washing of the streets—the water cart to be promptly followed by the scavengers so that the cleansing of the roads might be accomplished while the organic debris was wetted, and consequently could not rise as dangerous dust into the air.*
- (2) *The prevention as far as possible of the breeding of flies in the town.* I pointed out that flies breed in large numbers in brickfields where organic refuse is used, and in all other stagnant collections of organic refuse, such as midden-privies, stables, etc.
- (3) *The prevention as far as possible of excessive bacterial growth in milk.* I detailed the efforts which were being made in the Borough with this object in view. During 1904 the Town Council passed an important resolution, submitted by the Health Committee acting upon my advice, as a further aid in this direction.

The Council accepted the dictum that flies and dust play a considerable part in the bacterial pollution of milk, and accordingly the following regulation was made pursuant to the powers given under and contained in Art. 13 (d) of the Dairies, Cowsheds and Milkshops Order 1885, requiring under penalty that—

“ Every purveyor of milk, or person selling milk by retail shall cause every vessel containing milk for sale to be kept properly covered, or to be otherwise sufficiently protected from contamination by dust or flies.”

This regulation was submitted to and approved by the Local Government Board, and the Common Seal having been affixed, and also the necessary notice given, the Regulation came into force within the Borough on and after the 25th day of July, 1904.

Notwithstanding the precautions taken under the last heading during the year, no less than 73 deaths occurred from diarrhœa and enteritis among infants under twelve months of age in the Borough, during July, August and September. 75 per cent. of these 73 deaths occurred during August, and 20 per cent. in the first half of September.

Diarrhœa.

I dealt with the late summer epidemic of diarrhœa in a special report, and again drew attention to the fact that the diarrhœa season was co-incidental with the fly season. I pointed out once more that the brickfields lying between Sutton Road and the Great Eastern Railway were great breeding places for flies, owing not only to the warmth but to the large amount of organic refuse deposited there for the purposes of brick-making. Some of this refuse is gradually destroyed by burning, but the burning does not keep pace with the daily deposit.

I pointed out further with the aid of a “spot map” that the majority of cases of diarrhœa occurred within a radius of one-third of a mile of the brickfields and that this fact strongly indicated the necessity for the Council to enforce one of two alternatives—either

- (1) To have the brickfields (being a dumping place of refuse and a breeding place for flies) removed further away from the town, or
- (2) Better and more in accordance with the teachings of Sanitary Science to provide a refuse destructor for the disposal of the town's refuse.

I stated my strong opinion that the provision of a refuse destructor, and the abolition of the brickfields in Sutton Road would undoubtedly result in a greatly diminished influx of flies in summer, and a coincidental reduction of diarrhœa.

Flies breed in, and are attracted by, organic filth—obviously they must be carriers of putrefactive and pathogenic germs. Equally obvious is it that in proportion to the dearth or abundance of flies, there will occur less or more contamination of food stuffs. Milk is the most easily contaminated of all foods, and forms an ideal nutritive medium for the rapid multiplication of bacteria. Hence the great importance of keeping flies from milk, and of keeping milk for human consumption at a cool temperature by means of refrigeration, &c.

Unfortunately the municipal measures in the prevention of infantile diarrhœa, which I advised in the way of more frequent and thorough street watering were not carried out during 1904 to the extent which in my opinion is desirable.

This was to some extent unavoidable owing to the breakdown of the sea-water plant at the height of the season and a simultaneous incapacity on the part of the Water Works Company to meet the deficiency. Fortunately the Council had recently acquired a Motor-water-van which was fed from the sea, and somewhat lessened the dust difficulties which prevailed.

In relation to the question of dusty streets and street cleansing I referred again in my special report to the importance of so constructing roads as to have a surface as hard and impermeable as possible. Flint roads readily crumble and rapidly become dusty, They, therefore do not readily lend themselves to cleansing, and thus are much the more inimical to health. Because of deleterious effects upon health, and because of the necessity for more frequent repair and scavenging, flint roads probably are the most expensive kind of roads in the long run.

I am glad to note that the Highways Committee is adopting in many new streets in the Borough a top surface of tar macadam. This gives a good, hard, durable surface which is of importance in connection with the prevention of diarrhœa.

The asphaltting of back passages in poor neighbourhoods is very desirable as a factor in the prevention of diarrhœa.

Another preventive measure which I am inclined to think would be of material assistance would be additional legal powers in connection with the keeping of poultry and other animals in small terrace gardens in congested districts in the town.

A very considerable number of persons who live in small terraced houses in the poorer parts of the town keep fowls, and often breed them. In some instances the back yard is practically converted into a fowl run.

As is well-known, birds are constantly excreting, and more constantly scratching the surface soil. Consequently it is not difficult to see that—in hot dusty weather—a considerable number of *Bacillus "Coli Communis"* (and other objectionable germs), must find their way through open doors and windows into the larder and kitchen, which abut upon the back yard.

Legislation should provide for—

- (1) Prohibiting the keeping of poultry in crowded districts unless the owners conform to certain regulations.
- (2) Limiting the number of animals (birds and other kinds of animals) kept on any inhabited premises.
- (3) Requiring that no poultry run shall be permitted within 25 feet of inhabited premises.
- (4) Requiring periodical cleansing of the fowl roost and fowl run.
- (5) Penalties.

The keeping of poultry in small back yards in towns should certainly be discouraged. It is good neither for the birds nor for their human owners to have them confined in small runs in close proximity to numerous dwelling-houses.

I have not as yet sufficient data to enable me to estimate any probable degree of prejudice to health through the keeping of animals in confined backyards—but I think it must be sufficiently

obvious that the circumstances of life under such conditions can hardly be termed quite sanitary.

During the year 1904, 83 deaths from diarrhœa were registered in the Borough, giving a death-rate of 1.97 for this zymotic disease.

This is a very high figure, and is actually about ten times the sum of the death rates during 1904 of the other ordinary zymotic diseases put together—including whooping cough, measles, diphtheria, typhoid fever, scarlet fever, and smallpox.

Were the deaths classified as "Enteritis" also included under "Diarrhœa" (as possibly some might with good reason be so transferred), this high mortality figure would be increased *pro tanto*.

During the last three years I have kept a register of infant deaths and of the results of inquiry into the same.

During 1904 particulars were obtained in connection with 132 infantile deaths.

An analysis of these shows that at least 108, or over 80 per cent., were artificially (and not naturally) fed children.

This corroborates the results of inquiry in 1902 and 1903.

There can be little doubt that for a varying time the majority of infants born enjoy the natural food fitted for their physiological needs, and prepared with inimitable accuracy in nature's laboratory—the human breast. This accentuates the disproportion of deaths occurring among the artificially-fed infants, for though probably not numbering more than from 25 to 30 per cent. of the total number of infants—the death rate among them was actually 80 per cent. of the total deaths.

For argument's sake let us assume that during the year 1904 that 15 per cent. of the infants born were artificially-fed. Then, of the 1,000* infants born, 850 would have been breast-fed and 150 artificially fed. 180 deaths occurred among these 1,000 infants born, and our inquiries have shown that 80 per cent. or 144 of these deaths would have been among the 150 artificially-fed children. On the other hand among the 850 breast fed children only 36 deaths would have occurred.

* The actual number was 1007.

Next, let us admit for the sake of enforcing the lesson that the above estimate of hand-fed children is too low. Let us assume that 30 per cent. were artificially and not breast-fed. We are still met with the disproportion of 144 deaths among 300 artificially-fed infants as against 36 deaths among 700 breast-fed infants.

I am confident that I am not over-stating the facts when I say that the *diarrhœa* death rate among bottle or hand-fed infants is at least ten times as great as that which occurs among breast-fed infants.

That this is not an over-estimate is I think proved by the fact which I pointed out in my special report on Epidemic Diarrhœa during August, 1904. My enquiries revealed the striking fact that out of no less than 54 infant deaths from diarrhœa during that month not one was stated to be a wholly breast-fed infant. This striking lesson must be duly noted.

Inquiries were made into 56 infantile deaths which occurred during August, including the 54 deaths from diarrhœa.

In 37 instances the Inspector reported flies as numerous.

In 3 " " " some flies.

In 12 " " " a few flies.

In 4 " " " ? as to flies.

With regard to the character of the food given, when the results of inquiry were analysed it was found that there were among these deaths :—

BREAST FED.		ARTIFICIALLY FED.				
Wholly	Partly.	Cow's Milk and Breast.	Cow's Milk alone.	Cow's Milk and other Food.	Condensed Milk alone.	Condensed Milk and other Food.
0		1	8	17	16	9

In three instances no particulars could be obtained, as the parents were visitors, and had left the town. In one other case particulars were refused.

In at least 18 cases, a "long tube" bottle was used.

In „ 18 „ a "boat" „ „

In 7 „ a spoon was used.

As to the quality of the condensed milk, in the majority of instances (21 out of 25) it was stated to be Nestle's brand, which is one of the best on the market.

As to cow's milk this was supplied by no less than 15 different vendors. The largest number of deaths from diarrhœa among the customers of any one milkman was 4, and this occurred among the customers of the biggest supplier, and was not out of proportion.

The ages of the children where deaths from diarrhœa were inquired into were as follows :—

AGES IN MONTHS.										
	Under 1 mon.	1-2 mons.	2-3 mons.	3-4 mons.	4-5 mons.	5-6 mons.	6-9 mons.	9-12 mons.	Over 12 mons. but under 15 mons.	
Breast-fed alone ...	0	0	0	0	0	0	0	0	0	
Cow's Milk alone or with "foods" ...	2	2	3	2	0	1	6	8	3	
Condensed Milk alone or with "foods" ...	1	3	2	1	6	3	3	3	4	
TOTALS	3	5	5	3	6	4	9	11	7	

It is evident from the above that the number of deaths during the first month of life was fewer in proportion than in the later months. The explanation I think is that a much larger number of infants are breast fed (probably 90 per cent) during the first month of existence, than at any later age. Although the actual number of infants living lessen through death during each succeeding month of age, the number of deaths from diarrhœa actually increase during the later months of infant life. After the first month an increasing number of infants are partially or wholly fed by artificial means, principally on cow's milk or condensed milk. After the sixth month the majority of infants are probably so fed.

From the inquiries I made in the course of the year 1904 into the deaths of 138 infants under 1 year of age, the following facts are of significant importance :—

110 of these infants were artificially fed,
28 were wholly breast-fed.

Of the 28 wholly breast-fed no less than 12 were premature infants that lived less than one week, while 5 were breast-fed premature infants, who died within 6 weeks of birth ; 5 of the remaining 11 died of convulsions before reaching one month of age, and 1 child died of pemphigus at 1 month. Only 5 breast-fed infants over 3 months and under 1 year of age died during 1904, and no less than 3 of these five died of whooping cough, which is a most fatal disease in young infants. The other two deaths were recorded as from pneumonia and consumption. Not a single death occurred from diarrhœa among the wholly breast-fed infants. On the other hand of the 110 artificially-fed infants under 1 year of age whose deaths were inquired into no less than 68 died of diarrhœa. Undoubtedly, therefore, artificially-fed infants incur enormous risks of contracting diarrhœa out of all proportion to breast-fed children. I have shewn that there is much evidence available to justify the opinion that these risks are enhanced in direct proportion to the relative abundance of flies and the want of care in excluding flies and dust from food.

It does not need much perspicacity to see that the easiest and surest path of safety for infants during the hot months of the year is *natural feeding at the breast*.

On the other hand, how is it that occasionally breast-fed infants die of epidemic diarrhœa ? I indicated how this could be explained in two contributions I made to *The Lancet*,* which, I am glad to say, attracted the attention of several medical men. I will briefly recapitulate the possible sources of danger here, by means of which even entirely breast-fed children may run a risk of dying of epidemic diarrhœa.

- (1) The breast nipples may not be kept in a clean condition.
- (2) The hands and finger nails of the mother may not be free from hurtful bacteria. As the nipple is often held between the fingers in the act of suckling it is obviously important that the mother's hands as well as her nipple should be clean.

*The Lancet, Sept. 24, 1904 ; Oct. 8, 1904.

- (3) "Dummy" teats may be used between feeding times. These abominations often fall on the foul street, or pavement, outside ; or on the germ-laden carpet indoors ; and (as I have seen), are generally replaced in the infant's mouth without even a pretence at wiping.
- (4) Unless care is taken, germ-laden flies may settle on the infant's lips, carrying direct infection.
- (5) Infants are often permitted to crawl along the floors of the common sitting room or kitchen, which must contain numerous deleterious germs brought in on boots, etc.

In all these ways, and no doubt many others, diarrhœa-causing organisms may be introduced into the alimentary systems of even breast-fed infants.

One point is quite clear, not only from my own investigations, but from those carried out in other districts also, viz. :—that the incidence of fatal diarrhœa among wholly breast-fed infants is almost a negligible quantity as compared with the enormous death rate from this disease among bottle-fed infants.

Thus in Stockport during 1903, of 2,800 children born, 1,960 were found to be wholly breast-fed, and only two deaths from diarrhœa occurred among these. While out of 840 bottle-fed children, 59 died of diarrhœa, a fatality seventy times as great as among the wholly breast-fed.

I have calculated, from various data of a wide nature, that the death rate among infants may be stated for large urban districts to average somewhat as follows :—

	DEATH RATE PER 1000 BIRTHS.	
	From all causes.	From Diarrhœa.
Wholly breast-fed infants	85	10
Infants fed wholly or partly on artificial milks	192	110
Infants fed wholly or partly on cow's milk	200	125
	} 196	} 117

These figures very clearly indicate the enormous waste of infant life every year through improper methods of feeding.

The above estimated death rate for "Diarrhœa" is the year's average. But as three-fourths of the mortality from diarrhœa occurs during six or eight weeks in the late summer the sacrifice of infant life during that short period is something too frightful to contemplate.

Let us assume that in Southend during August, 1904, there were 400 infants alive under twelve months of age being fed on artificial milk or cow's milk. No less than 50 of these children died of Epidemic Diarrhœa during the month.

Had the same rate of mortality as that in August obtained for a period of seven succeeding months, all these 400 children would have perished in that time.

Of course, this would not actually occur, because other things are not equal. Probably the larger number of these infants would be found in better class houses; further away from refuse heaps, slaughter houses, stables, etc.; the houses less infested with flies; the parents adopting more frequently, under medical supervision, precautionary measures such as boiling or pasteurising the babies' milk, etc.

But this consideration still further emphasises the awful mortality which occurs in the summer months among the infants of the poor truly a "destruction that wasteth at noon-day"—a yearly fulfilment of that which was spoken by the prophet "lamentation and weeping and great mourning, Rachel weeping for her children because they are not."

Further Notes on Diarrhœa.

The preceding paragraphs have shown the intimate connection between a high diarrhœa incidence and a high infantile mortality. The next few paragraphs will deal more generally with the diarrhœa statistics for the year 1904.

The deaths in the Municipal Borough of Southend-on-Sea attributed to diarrhoea were 83. In addition, 18 deaths were attributed to enteritis, an uncertain proportion of which should probably have been more correctly certified as "Diarrhoea."

The age distribution of these deaths was as follows :—

Disease.		Under 1 year.	1-5	5-15	15-25	25-65	65 and upwards.	All ages.
Diarrhoea	...	67	13	—	—	2	1	83
Enteritis	...	12	2	—	—	2	2	18
TOTAL	...	79	15	—	—	4	3	101

I have previously stated that the brickfields which breed myriads of flies in the tons of refuse there deposited are situated in the heart of All Saints' parish.

As mentioned in my Special Report on "Epidemic Diarrhoea," p. 12, there are two districts in the Borough of Southend which are comparable as regards class of inhabitants, class of houses, number of houses per acre, standards of cleanliness, extent of families, patronage by visitors of a certain class, and so forth.

These districts are in the parishes of All Saints' and St. Albans respectively, and will be referred to hereafter as "Districts No. 1 and No. 2."

"No. 1 District" in All Saints' parish comprises the area bounded by Sutton Road, Prittlewell Path, Southchurch Road and the Brickfields as indicated in the "spot map" here reproduced.

With the exception of a small portion, which is in St. Mary's parish, "District No. 2" is in the parish of St. Albans, and is an area bounded on the East by North Road, on the North by West Road, on the West by Hamlet Court Road, and on the South by Leigh Road. The mid-year population in "District No. 1" is estimated at 4,000, and in "District No. 2" at 3,875:

As regards sanitary conditions, "District No. 1" is wholly within $\frac{1}{3}$ mile radius of the fly-breeding brickfields, where house refuse is deposited for the making of bricks.

"District No. 2" lies within $\frac{1}{3}$ mile radius of a large rag and bone store—another fly-attracting industry—and is also within $\frac{3}{4}$ mile radius of the aforementioned brickfields. Further, a very considerable proportion of the inhabitants in this area keep poultry in their small backyards or areas. Flies are plentiful in both districts—distinctly more abundant in "No. 1" than in "No. 2." Eighteen deaths from Epidemic Diarrhœa occurred during August in "District No. 1," giving a zymotic death rate for the area in question for the month of 54.0.

In "District No. 2," 12 deaths occurred during August from Epidemic Diarrhœa, giving a zymotic death rate for the month of 37.1.

With the exception of "District No. 2," the parish of St. Albans is populated by inhabitants of more means and cleaner habits than the majority of the poorer classes, which inhabit that part of St. Albans parish, which is designated as "District No. 2." The total population of the parish of St. Albans for the year 1904 is estimated at 11,570, of which about 3,288 are in "District No. 2." Among the remaining 8,280 persons, not one death from diarrhœa was recorded during the year.

The principal points of distinction between "District No. 2" and the rest of St. Albans parish are as regards the former, poorer residents; less cleanly habits; more numerous flies; large proportion keeping poultry; and closer proximity to large rag and bone premises. It is noteworthy that 81 of the 83 deaths from diarrhœa in the borough all occurred within a period of two months, between July 24 and September 24.

The following tabular statement comparing the death rates from diarrhœa during 1904 in the various parishes, and in the areas designated "District No. 1" and "District No. 2" is highly instructive.

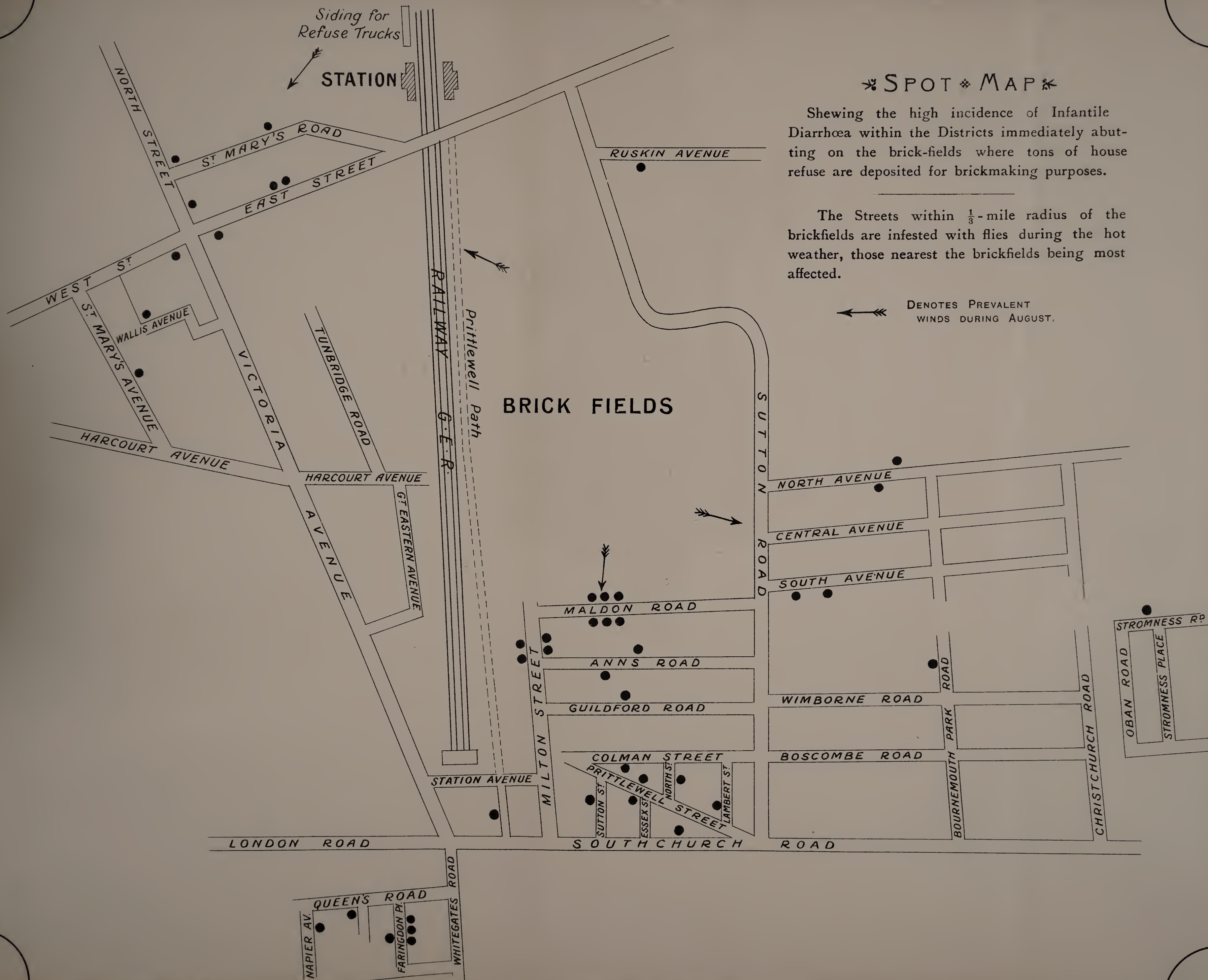
Parish.					Estimated Population.	No. of Deaths from Diarrhœa.	Zymotic Death rate for the year		
All Saints	{	“ District No. 1 ”		...	4,000	{	34	{	3·8
		Rest of Parish		...	4,776					8,756
St. Mary's	{	Within ½-mile of brickfields		...	1,860	{	7 4	{	2·1
		Rest of Parish (including part of “ District No. 2 ”		...	3,387					5,247
St. Albans	{	“ District No. 2 ” (except Salis-		...	3,288	{	13	{	1·1
		bury Estate in St. Mary's		...	8,281					11,569
St. John's	...	...	...	...	13,817	17	1·2		
Southchurch	...	...	...	...	2,555	8	3·1		
Totals for the Borough					..	41,944	83	1·9	

In view of the foregoing remarks it is evident that even during the hot summer months, considerable areas of the borough, with a considerable proportion of the whole population, were not affected with fatal diarrhœa. This proportion of the population included a corresponding proportion of the infant population. Yet no case of fatal diarrhœa occurred among their infants, though they were subject to the same climatic conditions, the same milk supplies, the same groceries, etc.

It is further evident that the districts which were affected with fatal diarrhœa, were in the proximity of collections of organic matter. These districts also suffered from plagues of flies, which were comparatively few in the non-infected districts.

These facts suggest the chief causal factors of diarrhœa—to be collections of organic filth as breeders of diarrhœa-causing germs and flies. They further suggest that flies are the principal agents by means of which these pathogenic germs are conveyed to the food of infants.

The age incidence table shows that fatal diarrhœa is chiefly a disease of infancy, and the facts I have elicited show beyond a doubt that the incidence of fatal diarrhœa in Southend during 1904 was



practically limited to bottle fed infants in poor districts, with obvious insanitary circumstances and plagued with flies.

That the obvious insanitary circumstances are only injurious during a short period of the year is equally obvious from the fact that fatal diarrhœa is practically limited to about six or eight weeks in the whole year. In other words the insanitary circumstances appear to cause diarrhœa only at such times as flies are numerous, and capable of carrying disease producing germs direct from the collections of organic filth to food. The more numerous the flies the more rapid the pollution of exposed milk, or other food, and the larger the number of cases of diarrhœa.

No doubt among the better class folk a large proportion boil or pasteurise milk before use, but this would not apply to condensed milk—but as compared with the poorer classes, probably fewer babies would be given condensed milk in houses where cows' milk was easily procurable.

It is evident that a large proportion of fatal diarrhœa occurs among infants fed on condensed milks. This inadequate food—of very poor quality when prepared according to the directions on the tins—no doubt leads to lessened resistance on the part of the unfortunate infants when attacked by disease, but the chief point of concern is, how did the infant get diarrhœa? If during the greater part of the year the infant can take condensed milk without diarrhœa, why should it cause diarrhœa for a few weeks in the year? I reply that it is probably because polluting flies abound during those same few weeks, crowding in battalions on every opened exposed tin of condensed milk. A further danger about condensed milk is that a tin lasts perhaps two or three days, and each succeeding hour increases the amount of pollution brought by flies. If a case of diarrhœa occurs in an adjoining house, flies settling on exposed excreta carry thence infective germs direct to food elsewhere.

Of course, not all cases of diarrhœa or epidemic diarrhœa are due to the agency of flies, but I am convinced that a very considerable proportion is due to pollution of cow's milk or condensed milk by flies in summer. This pollution occurs chiefly, but not wholly at the house of the consumer.

The defences against diarrhoea are in order of importance :—

- (1) The breast feeding of infants during the summer months.
- (2) Clean milk supplies from clean cows, with clean udders, milked by clean persons into clean vessels, immediately refrigerated and speedily delivered.
- (3) Covering over of all milk and condensed milk with effective covers to keep off flies and dirt of all kinds.
- (4) During the summer months cow's milk should invariably be boiled when it comes into the house, then placed in absolutely clean jugs and kept covered over with a clean plate or saucer in a cool place (preferably standing in a basin of cold water).
- (5) Fresh milk should be taken in every day. Stale milk is dangerous.

The following hints to householders were printed and issued at the height of the diarrhoea epidemic, and I think effected some good in checking the spread of the disease. In the worst districts I had the pamphlets distributed from house to house.

DIARRHOEA.

This Disease is very dangerous and rapidly fatal in young infants. It is therefore necessary to know how to *prevent* it rather than to hope to cure it.

Several causes contribute to this disease. Any or some or all of these causes may operate in a particular instance.

It is important to know what they are and to take the necessary precautions to prevent all, if possible. They are in one word—*Dirt*. In more than one word they are :—

- (1) Unclean milk and other foods.
- (2) Unclean jugs and bottles.
- (3) Unclean hands.
- (4) Unclean surroundings.
- (5) Unclean air (from overcrowding, &c.)
- (6) Unclean flies.
- (7) Unclean dust.

Diarrhoea is more common and fatal in hot weather than at any other time. Why?

- (1) *Because there are more flies*, which settle on dirty refuse heaps, dirty closets, dirty napkins, etc., and then settle on the food or tumble into the baby's milk, or get into the open tin of condensed milk, or walk about the sugar.
- (2) *Because there is more dust*, which is blown in at the open window on to milk and other food left exposed.
- (3) *Because Germs* are really very small microscopic plants, which, like nearly all other plants, *grow best when the weather is warm*.

Fortunately boiling will destroy nearly all germs. Therefore during the hot weather to prevent young infants from getting diarrhoea from milk—*boil all milk*—directly it comes into the house.

But this is not everything. If after milk is boiled it is put into a half-cleaned jug or cup or bottle, or is left exposed so that flies can settle on the margin or fall into it, it will rapidly become contaminated again.

Therefore after boiling always keep the milk in clean vessels and covered over with a clean cover.

The milk should also be kept as cool and possible. A good plan is to stand the covered milk jug in a basin of cold water.

A mother or nurse should always wash and dry her hands just before preparing the baby's meal.

A large number of people in a room contaminate the air of the room, and impart to it properties which will rapidly spoil milk. Therefore it is important not to allow several people to come into the kitchen or near the larder.

Every precaution should be taken to *prevent flies settling on food*, and to destroy flies in the house.

All animal and vegetable waste should be burned as soon as possible. If put into the dustbin or left about in the kitchen or larder they cause offensive smells and attract and breed flies.

Cleanliness in every detail is the great preventive measure against diarrhoea.

When a case of Diarrhoea occurs in a house great care should be taken to at once place soiled napkins, etc. in a disinfectant solution, and to boil all infected articles as soon as practicable.

If napkins, etc. are left exposed flies can settle on them and carry back infection to the baby or to other children in the same house or in neighbouring houses.

August, 1904.

Medical Officer of Health.

In future, similar precautions will be printed and issued about the beginning of July in each year.

Among further precautionary measures to have effect in future years are some I have referred to in previous Annual Reports, such as

- (1) A compulsory Course of Hygiene for the elder girls in schools, with special reference to the feeding of infants.
- (2) The appointment of a Lady Sanitary Inspector, among whose duties might be included the imparting of instruction where needed.
- (3) Voluntary assistance by "health visitors."

Inquests.

During the year 1904, 30 inquests were held, the causes of death given being :—

1.	Natural Causes	...	...	...	...	7 deaths.
2.	Accidental	...	...	...	...	9 „
3.	Suicidal	...	...	...	...	6 „
4.	Open Verdict	...	...	...	...	5 „
5.	Manslaughter	...	...	...	...	1 „
6.	Want of proper attention at childbirth...					1 „
7.	Want of attention at birth	...	...	...	...	1 „

Uncertified Deaths.

Thirty-one deaths, or 5·2 per cent. of the total, were uncertified. The following figures show the number of deaths uncertified each year since 1895 :—

	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Uncertified Deaths	10	7	8	16	12	27	22	24	29	31

Notifiable Zymotic Diseases.

As in former years a weekly return of notifications is made to the Local Government Board, and a monthly return to the County Medical Officer. During 1904 there was a very marked decrease in the number of cases of notifiable diseases. This is particularly marked as regards typhoid fever, while a very considerable reduction in the prevalence of scarlet fever is also noteworthy.

Twice during the year I had occasion to report to the Health Committee infringements of Section 126 of the Public Health Act, 1875. In each instance the Town Clerk was instructed to write a letter to the offender threatening proceedings in the case of the recurrence of the offence.

The following table shows the number of notifications for each month in the year 1904 :—

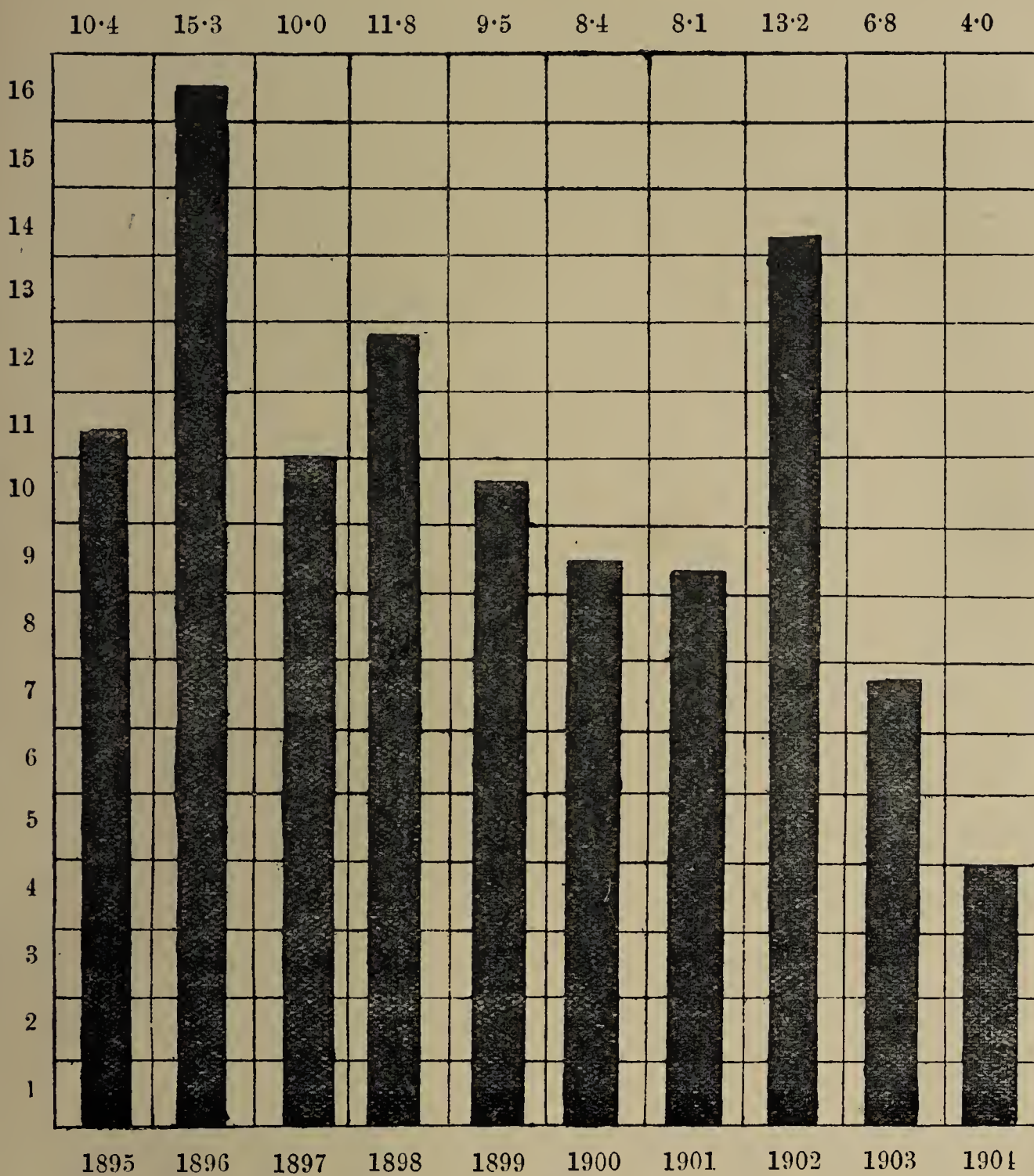
	Small-pox.	Scarlet Fever.	Diphtheria, Membranous Croup.	Typhoid Fever.	Puerperal Fever.	Erysipelas.	Total for each month.	Subsequently withdrawn.			Imported.			Net number arising in the Borough.
								Diphtheria.	Typhoid Fever.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Scarlet Fever.	
January		3	5	1		1	10							10
February		2	4	1		1	8	1						7
March		2	6	1		6	15	1						14
April	1	1	5	1		1	9	1	1					7
May		10	8	2		3	23		1		1	1		20
June		1	8			3	12				1			11
July		4	8			3	15	1			1			13
August		8	4	7		1	20				1	3	4	12
September		4	5			1	10							10
October		10	9	2		1	22				1	1	1	19
November		4	12	3		1	20		1					19
December		1	2			1	4							4
Totals	1	50	76	18		23	168	4	3		5	5	5	146

From the above table it will be seen that there were only 168 notifications of infectious disease during 1904 as against 256 in 1903, 446 (excluding chicken pox) in 1902, 257 in 1901, 239 in 1900, 236 in 1899, 267 in 1898, 194 in 1897, 269 in 1896, and 170 in 1895.

The actual number of notifications during 1904 was actually less than in 1895, when the population was only a little over 16,000, the population in 1904 being nearly 42,000.

The incidence of notifiable zymotic disease during 1904 per 1,000 population was only 4·0 as against 6·8 in 1903, 13·2 in 1902, 8·1 in 1901, 8·4 in 1900, 9·5 in 1899, 11·8 in 1898, 10·0 in 1897, 15·3 in

1896, and 10·4 in 1895. I have constructed a diagram which shows the marked relative decrease of notifiable diseases, particularly of late years.



Small Pox.

One case occurred in April, 1904, the patient having acquired the infection in London. The usual measures of notification— isolation in hospital, disinfection, and vaccination of contacts, as detailed in previous reports, happily prevented any spread of the disease.

Scarlet Fever.

During 1904, 50 notifications were received of 49 cases of this disease, as against 73 in 1903, 109 in 1902, 99 in 1901, and 142 in 1900. One case was notified by two doctors. Five of the 49 cases were undoubtedly imported, and in two others the evidence was very strong as to importation. The number of infected houses was 33 as compared with 62 in 1903, 91 in 1902, 71 in 1901, and 112 in 1900. There occurred in 24 houses, 1 case; in 5 houses, 2 cases; in 3 houses, 3 cases; and in 1 house, 6 cases. This last instance was due to the neglect of the parents to call in medical advice when the first child fell ill, the parents pleading ignorance as to the nature of the illness and incapacity to pay doctor's fees. The facts were reported to the Health Committee, but it was decided in view of the plea of ignorance not to prosecute. I learnt of the case through the Head Master of the Leigh Road Boys' School, to whom the parent had gone to explain the absence of his children. The children were all removed to hospital, and disinfection of the home was carried out as thoroughly as possible. Fortunately no spread of the disease occurred from this family in the neighbourhood of the dwelling house, but two other cases which occurred among scholars attending the Leigh Road Schools were possibly connected with this source.

The age distribution of the 49 cases of Scarlet Fever notified was as follows :—

1 to 5 years	5-15 years	15-25 years	25-65 years
10	35	2	2

The monthly incidence of Scarlet Fever during 1904 was as follows :—

January	...	3	July	...	4
February	...	2	August	...	8
March	...	1	September	..	4
April	...	1	October	...	10
May	...	10	November	...	4
June	...	1	December	...	1

Six of the cases in October occurred in one house. Another case was definitely imported. Four of the eight cases in August were imported. In May the source of infection of the first cases could not be definitely ascertained, but the period of incidence pointed to a Whitsuntide importation of infection.

The incidence rate during 1904 was 1·16 per 1,000 population. The zymotic death-rate was 0·00—no deaths being recorded from Scarlet Fever during 1904—as compared with a zymotic death-rate of 0·08 in 1903, 0·03 in 1902, 0·06 in 1901, and 0·07 in 1900.

There were no “return” cases.

Altogether, both in point of numbers and mildness of type of disease 1904 was a very satisfactory year in Southend as regards Scarlet Fever.

Diphtheria and Membranous Croup.

During the year there were 72 notifications of Diphtheria, and one of Membranous Croup. Six of these cases were definitely imported, 1 in April, 2 in May, 1 in June, 1 in July, and 1 in August. In addition there were four notifications which were subsequently withdrawn. Several of the notifications were based on a bacteriological diagnosis.

The monthly incidence of the disease was as follows during 1904 :—

January ...	5	July ...	{ 6 + 1 withdrawn	
February	3 + 1 withdrawn		{ 1 membranous croup	
March ...	5 + 1 withdrawn	August	...	4
April ...	4 + 1 withdrawn	September	...	5
May ...	8	October ...	...	9
June ...	8	November	...	12
		December	...	2

In January four of the five cases occurred in one family. In February two of the three cases were notified by myself. I discovered them through tracing an absentee from school. The clinical signs were meagre, but the bacteriological evidence was

quite conclusive. I ascertained subsequently that these children were cousins of a previous case. The early recognition of these cases by bacterioscopic aid prevented what might otherwise have been the source of an insidious outbreak.

In March four cases occurred in connection with two private schools in Westcliff. In both instances closure of the school was advised by extending the usual Easter holidays. In both instances defective drainage arrangements were found on the school premises and were remedied. In May a case was imported and gave rise to two others in the same house, and was also accountable for yet another case. The imported case was detected by the aid of bacterioscopic examination, but no membrane was present. In June three cases occurred in one house. They had recently been in contact with a visitor who had had diphtheria in another town a few weeks previously. One notified case in June was imported, while close inquiry into the remaining three cases produced evidence of inter-contact direct or indirect prior to notification.

In July, one case was imported, and four cases in St. John's parish were all traceable to one primary case. They were notified on the 22nd and 23rd of the month, but energetic measures prevented any further spread. During this month I found it necessary under Sec. 6 of the Infectious Diseases (Prevention) Act, 1890, to require the owner of certain infected bedding to deliver the same over for disinfection.

In August, 1 case was definitely reported.

In September, 3 cases occurred in one family, and a fourth early in October, but the primary source of infection could not be traced. The other two cases were of independent origin—one being consequent on a "carrier" visitor from London—this source being detected by bacteriological aid.

In October, one case was imported in the person of a schoolboy, a boarder at a private school. His father is a sanitary inspector in a metropolitan borough. He arrived in Westcliff unwell, and was kept in bed for a day or two, and then joined the school. A few days

later, a playmate fell with laryngeal diphtheria, and on inquiry I learnt of the indisposition of the lad from London. A bacterioscopic examination of a swab from this lad's throat revealed almost a pure culture of Klebs-Löffler bacilli. Unfortunately, through a misunderstanding, he had been sent back to London before the result of bacterioscopic examination was known. I immediately communicated with the Medical Officer of Health of the London District. He made a clinical examination of the boy, and observed nothing out of the ordinary. He, however, submitted a swab to the Clinical Research Association, who reported "a few Klebs-Löffler bacilli present." Unfortunately, the boy received no proper treatment, and was sent back to Southend three weeks later without further bacteriological examination. I had warned the schoolmistress not to receive him without a bacteriological certificate, but as time would not permit of refusing to receive him, he was met at the station, and at once taken to the local doctor's house to be swabbed. I found numerous diphtheria bacilli in the culture. He was immediately isolated. A few days subsequently he developed severe cardiac and other toxic symptoms. In the meantime he infected his nurse in turn.

In November no less than four schools were implicated, one public elementary school and three private schools. Pains-taking inquiry traced the source of origin in each case, and enabled effective preventive measures to be taken. This involved heavy work for me at the laboratory, where I made no less than 150 bacterioscopic examinations in connection with diphtheria and sore throats during the month.

Various forms of sore throat were prevalent during the month of November. Altogether during the year I examined 569 swabs submitted by doctors for examination. The above history of diphtheria in Southend during 1904 shows without doubt that personal infection plays the principal part in the spread of this disease.

The public elementary schools were on the whole very free of diphtheria during 1904. The Leigh Road Infants' School was, however, the probable source of infection of two cases in October, and jointly of two cases in November.

Typhoid Fever.

I have written so much on this disease which was formerly endemic in the borough, and I have accumulated so many interesting facts, together with the deductions I have made from them, that I find it difficult to decide how to treat this subject in the present Annual Report.

The bare statistics for 1904 are a volume in themselves if the statistics of former years are borne in mind. These statistics are, of course, the main points which it is absolutely incumbent on me to record in this report. They are as follows:—15 cases were notified during 1904, including 6 imported cases. In addition 3 notifications were subsequently withdrawn, the illness eventually proving to be of another nature. The number of cases originating in the borough was therefore only 9, as compared with 61 in 1903.

Two deaths were registered from typhoid fever during the year, one early in January being a case notified in 1903, but in accordance with the usual custom this death is included in the returns for 1904, and the case mortality reckoned on the actual number of cases and deaths during the year. The case mortality was therefore 13·33 per cent.

The Zymotic death rate, calculated on the population of the Borough during 1904, reached the remarkably low figure of 0·04, as compared with 0·29 in 1903. The case-rate, calculated on the whole of the 15 notifications was only 0·35 as compared with 1·9 in 1903. If we subtract the cases which were undoubtedly imported into the Borough (for instance two visitors actually ill on the day of arrival and notified as suffering from typhoid fever within a week of arrival) the incidence rate of cases proper to Southend would be still further reduced. But Southend has every reason to be satisfied even with the figures as they stand, without any correction. The County Medical Officer of Health (Dr. Thresh) has almost yearly drawn attention to the excess of Typhoid Fever in the districts at the mouth of the river Thames as compared with the rest of the county. When he comes to compile his usual admirable Summary of the Reports of the District Medical Officers of Health in the administrative County of Essex for the year 1904, I rejoice to think he will have a different tale to relate.

As far as Southend is concerned at any rate, instead of an incidence rate varying from three to six times that of the rest of the County it is my pleasurable duty to record that during 1904, the incidence rate was less than half that of the average for the whole County during the previous 14 years. If the indigenous cases alone are considered it was, indeed, only one-fourth of this average.

The record of monthly notifications will be found in the table on page 32. The age distribution was as follows :—

Age period	5-15	15-25	25-65	} 15 Net Notifications.
Cases notified	4	3	11	
Subsequently withdrawn	1	—	2	

The monthly incidence was as follows :—

January... 1	July ... 0
February 1	August ... 7
March ... 1	September 0
April ... 1—withdrawn	October... 2
May ... 2 { 1 subsequently withdrawn	November 3 { 1 subsequently withdrawn
June ... 0	December 0

Case I.—Notified in January was probably infected in Wakering where typhoid fever was known to exist at that time.

Case II.—The case notified in February came under my care at the Sanatorium, and I re-diagnosed it as a case of paratyphoid.

Case III.—The case notified in March followed on the eating of *oysters* from a source known to be liable to pollution.

Case IV.—The case in May was a person in the habit of frequently eating *oysters* in London.

Of the seven cases in August, three :

Cases V., VI. & VII. were definitely imported. Two arrived in the town ill, and their illness was traced to contact with another case in London.

Of the cases which apparently originated in Southend, two, viz. :

Cases VIII. & IX., followed the eating of *oysters*, and two, viz. :

Cases X. & XI., followed the eating of *cockles*. In neither case were the cockles procured from local dealers.

Cases XII. & XIII.—In October, both gave a history of *oysters*—in the one case eaten in London ; in the other, gathered by the victim from the banks of the Leigh Swatch.

Cases XIV. & XV.—In November, both followed the eating of *oysters* obtained from a source known to be liable to pollution.

The above brief outline is very suggestive. No less than 8 of the 15 cases notified during the year were attributable to contaminated *oysters* as the most likely source of infection, and 2 of the remaining 7 could be attributed to imperfectly-cooked contaminated cockles.*

It is, however, my pleasing duty to record that the cockles were not obtained from local dealers, and in only one instance were oysters obtained from a local vendor. These facts speak much for the care now exercised by our local shellfish merchants. In two instances the oysters were procured or eaten in London, and should be excluded from local indigenous cases.

Of the five remaining cases one was imported from Grays (probable source of infection ice-cream), being a scholar at a school where several boys were stated to have been infected. Two were imported from Edmonton, and arrived ill in Southend (probable source a previous case in Edmonton). One was probably infected at Wakering. One gave a negative Widal throughout, and presented other anomalous features, and was in my opinion a case of paratyphoid, and not genuine typhoid.

* Careful inquiries were made in *every* case as to water, milk, watercress, and other uncooked vegetables ; contact with previous cases, etc.—but apart from shellfish no other known source of the disease could be ascertained among the cases here attributed to shellfish.

In view of the histories given it is not, I think, unfair to suggest that had the eating of shellfish not been indulged in, there would have been hardly one indigenous case of typhoid fever in Southend during the year.

Properly cooked cockles appear to be incapable of disseminating typhoid fever.

I desire to draw particular attention to the fact that there was not one single notification of typhoid made during the whole month of September. A glance at the accompanying curve will show that hitherto September has been the month *par excellence* for typhoid fever in Southend. The average number of notifications during September for the years 1895 to 1903 inclusive is 16 cases.

Three factors are probably chiefly responsible for the remarkable record of 1904. These are :—

- (1) The majority of shellfish sold in Southend come from purer sources than before I attacked this matter in 1902.
- (2) Cockles are now thoroughly cooked (steamed) instead of being sold half raw as formerly.
- (3) The simultaneous absence of typhoid fever in Leigh.

This third point is of very high importance, because cockles are still laid in the Leigh creek, the mud and waters of which are daily subjected to gross bacterial pollution from the sewage effluent which flows down the creek on the ebb tide when the effluent is discharged, and some Leigh cockles are still sold in Southend.

There is, however, fortunately, good reason to think that even if specifically polluted cockles are thoroughly cooked by steam under pressure they will be rendered innocuous, but it is certainly still more reassuring to know that during the greater part of the year no specific bacilli were entering the waters of the Creek via the sewage effluent. The following facts and statistics are of interest :—

In 1894, among every 10,000 inhabitants, upwards of 100 persons had typhoid fever. From 1895 to 1898, among every 10,000

inhabitants about 55 persons had typhoid fever. From 1899 to 1903, among every 10,000 inhabitants about 20 persons had typhoid fever. In 1904 among every 10,000 inhabitants, barely three persons had typhoid fever. Had the same incidence of typhoid fever obtained in 1904 as in 1894 there would have been at least 400 cases; ditto 1895 to 1898, 225 cases; ditto 1899 to 1903, 80 cases; It will be observed from the above statistics that a considerable reduction in typhoid fever occurred during the years 1895 to 1898, before the new drainage schemes came into operation in the Borough, and before a systematic house to house inspection was instituted. How is this explained? It was in the year 1895 that the medical profession generally became aware that the poison of typhoid fever often lurked in the innocent looking oyster. Naturally, a considerable proportion of the public soon became more cautious as to eating oysters of doubtful origin. I think we see the effect of this spreading knowledge of danger among the profession and the public in the immediate reduction of typhoid fever incidence in Southend by nearly 50 per cent. before any effective drainage schemes could come into use. Between 1897 and 1899, the new sewerage schemes were carried out, and since then the sewage of both the eastern and western districts has been carried much further seaward, and systematic house to house inspection has been in force also since 1897. Coincidentally, a still spreading knowledge of the dangers connected with sewage polluted oysters also obtained, and, in consequence of the improved sewerage schemes, there also, since this time, has been less gross pollution of the shell fish lying on the fore-shore. As a result of this spreading knowledge, combined with sanitary improvements between the years 1899 and 1903, we see a still larger reduction in the incidence of typhoid fever in the district. In spite, however, of all sanitary improvements and of a lessened consumption of polluted oysters, an excess of typhoid fever still prevailed in the Borough. After careful inquiry into the epidemiological factors in an outbreak of typhoid fever in June and July, 1902, by means of deductive reasoning, I clearly and logically established the causal connection of partially cooked cockles from a polluted source with this outbreak of the disease.

My continued investigations into the matter convinced me that I had, without a doubt, discovered the cause of the continued pre-

valence of typhoid fever in the districts at the mouth of the Thames, and, in spite of considerable opposition and criticism, I almost monthly waged a crusade against half-cooked cockles from polluted sources.

Though my views and assertions were received at first with some bitterness by many persons interested in the trade, the better sense of the more intelligent prevailed, and ways and means of improving matters were considered. A deputation of several of the leading cockle merchants in the town interviewed me early in the year, in 1903, and as a result, before the season of 1903 commenced, these gentlemen had arranged to get cockles from purer sources than formerly, and to boil them in clean water in a large tank of 140 gallons capacity. The temperature of this large quantity of boiling water was not reduced when the ordinary quantities of cockles were immersed, and the water in which the cockles were placed for a period of four minutes was actually boiling all the time. The result was that, although during 1903 several cases of typhoid fever occurred in Southend, not one single case occurred among persons who obtained cockles from the particular vendors who cooked cockles in this effective manner.

During 1904, improved methods of subjecting cockles for four or five minutes to the action of live steam were introduced, and practically every cockle merchant in the town adopted this method of cooking cockles.

As a result, I have the pleasure and satisfaction of stating that during the whole of 1904, not one single case of typhoid could be traced to cockles sold by any of the ratepaying cockle vendors in the town.

It must be equally satisfactory to the cockle merchants to know that, provided they continue strictly to observe the precautions adopted during 1903 and 1904, their trade will not only have been saved, but probably will be greatly extended.

To the Borough as a health resort the results which have been achieved are of transcendental and probably incalculable moment.

Not only have many hundreds of pounds expenditure in connection with typhoid fever been saved during 1904, which hitherto has been a yearly tax on the ratepayers, but it is evident also (which is of higher consequence) that many lives and much suffering have been spared.

Further, what is of the highest possible consequence to the Borough of Southend as a health resort, its reputation is now enhanced. Hitherto, the terrible incubus and stigma of a typhoid-ridden district has hampered its progress as a health resort for the wealthier classes.

The reduction of typhoid fever in a single year is really amazing. In my report for 1903, page 46, I felt justified in stating that apart from shellfish "It would be found that this district naturally is not more an endemic centre of typhoid fever than any other district in Essex." The returns for 1904 form a remarkable confirmation of this judgment.

During September, 1904, Southend with a residential population of 42,000, and a large influx of visitors, had not a single notification of typhoid fever. The meteorological conditions which prevailed in the summer and autumn would be considered as favourable for the prevalence of the disease, yet during 1904 there was a reduction of about 80 per cent. in the number of cases as compared with the average of the years 1899 to 1903, and a reduction of at least 95 per cent. as compared with a decade ago.

If, as in my former reports, it be assumed that 95 per cent. of the population do not eat shellfish, while 5 per cent. do eat shellfish, during the year 1904 there would have been about 2,000 persons eating shellfish as compared with 40,000 who did not eat shellfish. From the history of the cases given above (p. 39, 40) it will be noted that omitting case i. as probably imported, and case ii. as probably not typhoid fever, and cases v., vi., and vii. as definitely imported, the remaining ten cases all gave a history of shellfish, and would therefore all be found among that small proportion of the population which eat shellfish. But without making any deductions, except of the 3 very definitely imported cases, the figures show 10 cases

among the small proportion of about 2,000 persons who eat shellfish, as against 2 cases (and one of them a doubtful one) among 40,000 persons who did not eat shellfish. This gives an approximate incidence rate of 5 per 1,000 among shellfish consumers as compared with an approximate incidence rate of only 0·05 among persons who do not consume shellfish—in other words an incidence 100 times as great in the smaller shellfish eating section as in the larger section who do not eat shellfish.

Dr. Bulstrode, in a recent report to the Local Government Board upon the oyster question, records his conviction (which is one, I am sure, endorsed by all medical men) that the ingestion of moribund oysters may set up acute diarrhœa and vomiting. There are, however, three important points to observe in order to avoid misapprehension—(1) Dr. Bulstrode particularly specifies diarrhœa and vomiting—in other words, acute gastro-intestinal catarrh, not typhoid fever ; (2) Dr. Bulstrode inculcates dying oysters, not dead or putrid oysters, which would rarely be eaten even by the most careless ; (3) Dr. Bulstrode makes no reference to cockles. At any rate, as far as Southend is concerned, we have just passed through a hot summer. If the keeping of oysters and cockles exposed to the sun had anything to do with the incidence of typhoid fever we should, under the circumstances, have had at least an average number of cases. What are the actual facts ? Hardly any typhoid fever at all. But the precautions taken by shellfish vendors, acting under my advice, have not been in the direction suggested by Dr. Bulstrode, but in the direction of greater care in procuring shellfish from the least polluted layings, and in cooking cockles thoroughly before exposing them for sale. Should the sanitary inspectors come across moribund oysters or putrid shellfish such would, of course, be seized under Sections 116—119 of the Public Health Act, 1875, as extended by the Public Health (Amendment Act), 1890. No such instance has, however, come under my notice, nor have I received any complaint from any person as to staleness of shellfish supplied.

The following table shows the monthly distribution of typhoid fever in the borough since 1895, and I have constructed diagram I. to show the incidence rate per 1,000 of population for each year since 1893.

TABLE SHEWING MONTHLY NO. OF CASES.

		1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
January	...	8	7	3	4	9	—	3	3	3	1
February	..	8	—	1	4	1	2	—	4	—	1
March	...	1	1	—	4	2	3	1	1	—	1
April	... ..	2	—	4	1	3	3	—	2	—	—
May	... ..	1	1	1	3	—	1	2	2	2	—
June	... ..	4	1	1	6	1	1	1	20	—	—
July	... ..	2	4	1	7	4	3	4	19	4	—
August	...	8	21	8	4	2	1	8	9	3	4
September	...	17	22	21	14	14	18	10	12	15	—
October	...	8	17	17	16	9	10	5	20	22	1
November	...	12	3	6	23	5	8	6	2	10	2
December	...	17	9	—	9	2	5	5	7	1	—
TOTAL	...	88	86	63	95	52	55	45	101	60	10
Population	...	16,203	17,529	19,302	22,583	24,710	27,721	29,793	33,537	37,283	41,944
Rate per 1000		6.4	6.1	4.09	5.4	2.3	2.02	1.51	3.01	1.60	0.23

DIAGRAM I.
TYPHOID FEVER—SOUTHEND-ON-SEA.

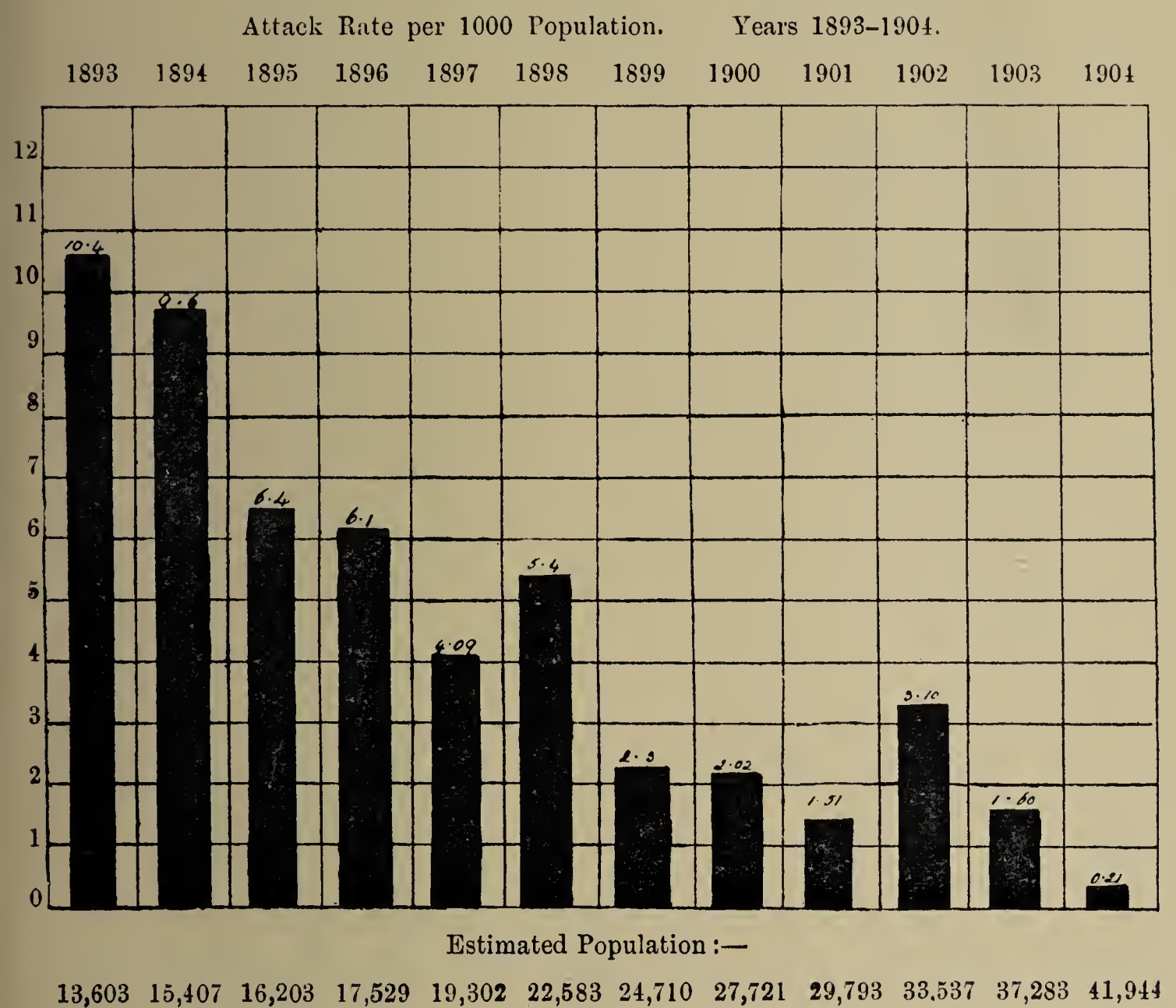


Diagram II. shows the actual number of cases originating in the Borough each year, together with the population resident in the Borough for each year of the series. It will be noted that 1904 stands quite by itself.

DIAGRAM II.

Actual Number of cases of Typhoid Fever arising in the Borough of Southend-on-Sea, 1895-1904.

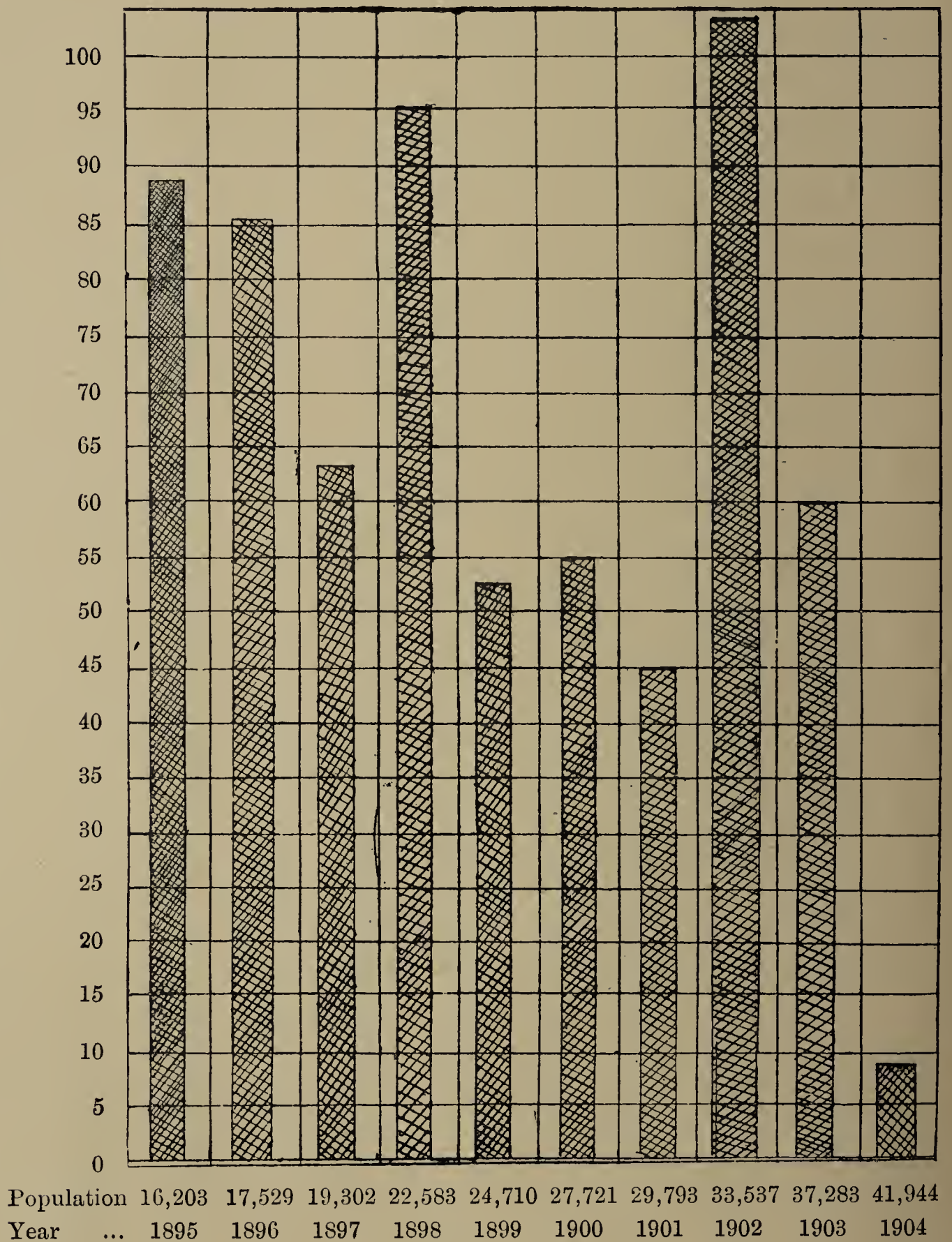
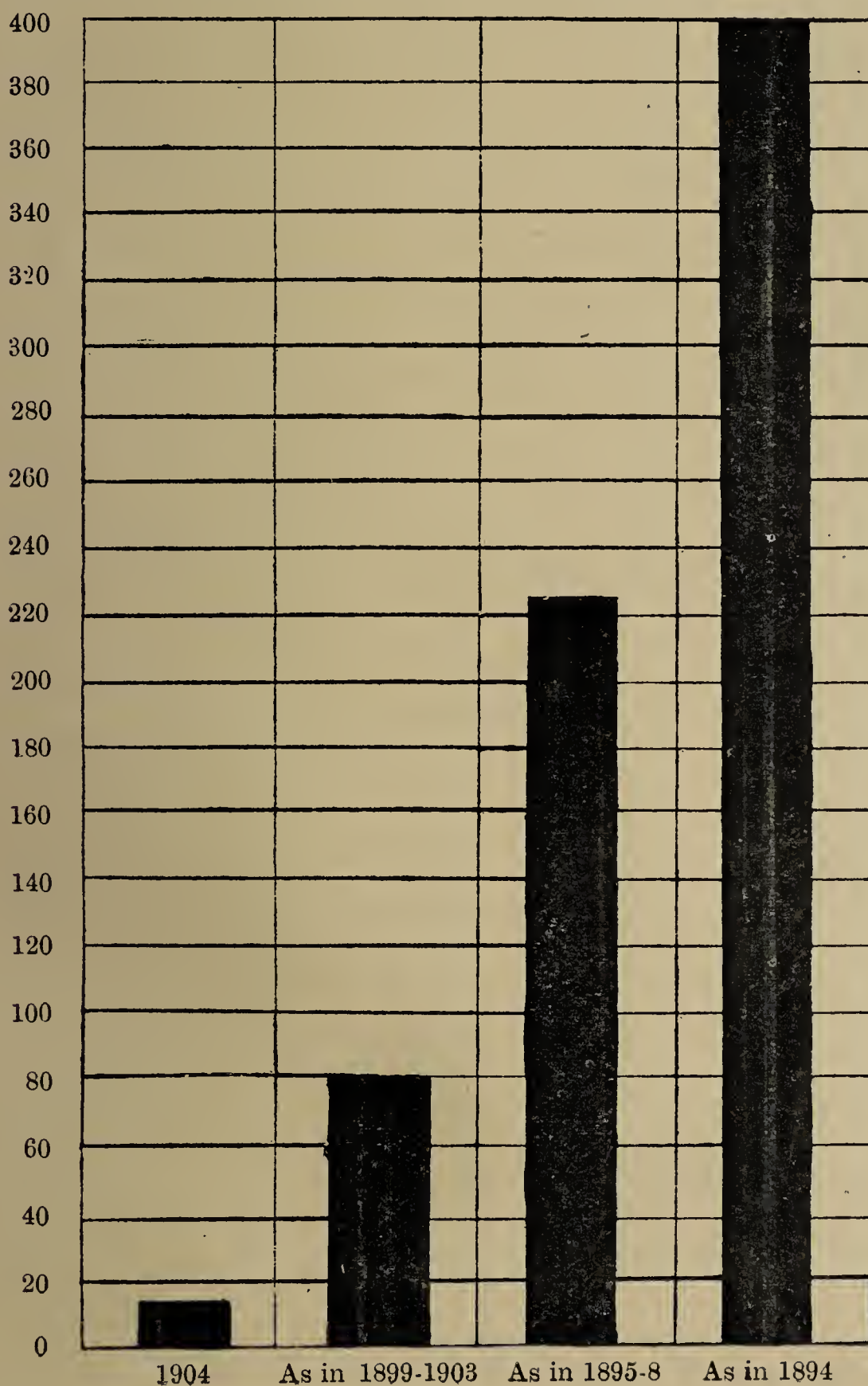


Diagram III has been constructed to show the relative incidence of Typhoid Fever in Southend in 1904 as compared with previous years, on the supposition of a constant population during the whole series of years.

DIAGRAM III.

Diagram to show relative incidence of Typhoid Fever in Southend in 1904, as compared with previous years



The following table is of interest as showing the result of inquiries made as to the relation of shell-fish to notifiable infectious diseases during the years 1902, 1903 and 1904.

Table shewing results of enquiries made as to the relation of shellfish to notifiable infectious diseases :—

FOR THREE YEARS, 1902, 1903 & 1904.

	Total No. of Cases.	Shellfish Eaten or handled.	No Shellfish eaten or handled.
(1) All other infectious diseases (including Scarlet Fever, Small-Pox, Diphtheria, Chicken-Pox, Erysipelas, &c., but excluding Typhoid Fever)	830	6 0·7 %	824 99·3 %
(2) Typhoid Fever alone	149	93 62·6 %	56 37·8 %

In connection with the above table, it is necessary to know that the term "Shellfish" includes all forms of molluscs :—Oysters, Cockles, Mussels, Winkles, Clams, etc. The 93 Typhoid Fever cases had almost invariably partaken of the first 3 named ; while the 6 cases among the other infectious diseases had partaken only of winkles, crabs or shrimps. Crabs and shrimps being crustaceans, should perhaps not be included, but let it stand. The small proportion of shellfish eaten among the cases of other infectious diseases indicates that shellfish have absolutely nothing to do with these various diseases. On the other hand, the high proportion of shellfish eaten among the Typhoid Fever cases speaks for itself ; and it must further be remembered that among the 56 cases which did not eat shellfish were a large number secondary to shellfish cases.

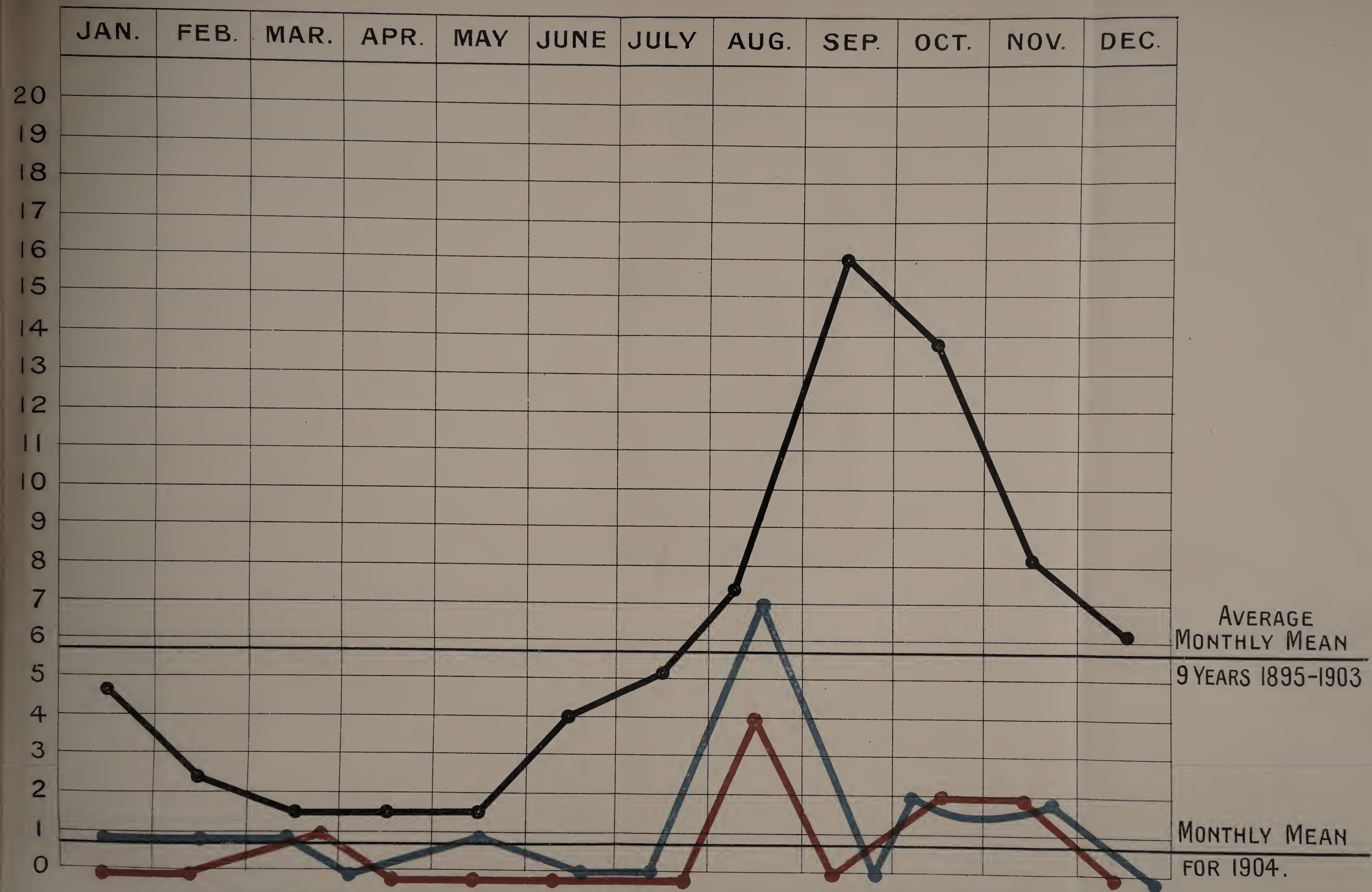
Erysipelas.

Twenty-two cases were notified during 1904, one of which proved fatal. One case was notified by two doctors—making 23 notifications.

The age distribution was as follows :—

Ages ...	5-15	15-25	25-65	65 and over.
Cases ...	2	3	16	1

Some persons are particularly subject to this disease, and for a period of years appear to be liable to repeated, even annual, attacks.



CURVE CHART shewing average number of cases of Typhoid Fever arising in the Borough during the 9 years 1895 to 1903 inclusive—**Black Curve.**

Actual number of indigenous cases for each month during 1904—**Red Curve.**

Total number of cases (indigenous and imported) in Southend during 1904—**Blue Curve.**

The chief points are : —(1) The month of highest incidence in 1904 (August) was still below the average monthly incidence of previous years.

(2) There were no cases in September, 1904, as compared with an average of 16 cases for September during previous years.

(3) The average monthly incidence for 1904 was less than 1 case, the actual figure being 0.75.

Eight of the 9 cases occurring during 1904 had partaken of shellfish (Oysters, 6 cases; Cockles, 2 cases) from polluted sources within the usual incubation period of the disease.

During 1904 improved methods of cooking cockles were adopted both in Leigh and Southend-on-Sea.

Non-Notifiable Zymotic Diseases.

Measles.

This disease was more or less prevalent during the year. I heard of some cases through the head teachers of the schools. Owing partly to Measles being a non-notifiable disease it is frequently introduced by visitors to the town. Whenever I learn of an outbreak I have precautionary printed notices left at houses in infected streets. I think these pamphlets have been of decided value. There were only 3 deaths during the year. These occurred in children between 1 and 5 years of age. The zymotic death rate was 0·07.

Owing I think to the precautionary measures adopted which have to a large extent prevented severe epidemics of Measles of late years, it will be observed from the following table that in spite of the rapidly increasing population fewer deaths have occurred from Measles, and the disease has lost the tendency to cause deaths (and presumably cases) in considerable numbers every two years with free periods between. Formerly the disease acquired epidemic proportions every two years, and exhausted the soil (the susceptible children). By limiting the spread of the disease by precautionary measures, susceptible children increase in numbers every year. Hence Measles is constantly occurring, but the figures are a testimony to the efficacy of the controlling measures employed. These will be referred to further under the heading of "schools."

Table shewing the number of deaths that have occurred in the Borough each year from measles since 1894 :—

Years	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Pop.	15,407	16,203	17,529	19,302	22,583	24,710	27,721	29,793	33,583	37,283	41,944
Cases	4	0	14	0	12	0	4	11	2	7	3
Zymotic Death Rate	0·26	0·0	0·81	0·0	0·53	0·0	0·14	0·37	0·06	0·18	0·07

A curve of the zymotic death rate shows more graphically the difference between the former epidemic deaths and the more uniform course of the disease since 1901.

Whooping Cough.

Similar precautionary measures are adopted in this disease whenever I learn of a case or a death. The precautionary pamphlet was recorded in my Annual Report for 1902.

During 1904, 5 deaths were recorded from this disease, 4 being infants under 1 year of age. One death occurred in the first quarter, 2 deaths in the third, and 2 deaths in the fourth quarter of the year. The zymotic death rate was 0·12 in 1904, as compared with 0·20 in 1903, 0·25 in 1902, and 0·84 in 1901.

Influenza.

Two deaths were attributed to this disease.

Tuberculosis.

I have dwelt fully with the preventive measures available in former reports.

That some of these should be adopted in addition to the disinfection of rooms after death is strongly indicated by the death returns for 1904. During the year 50 deaths were attributed to Pulmonary Tuberculosis or Phthisis, and 21 deaths to other tubercular diseases.

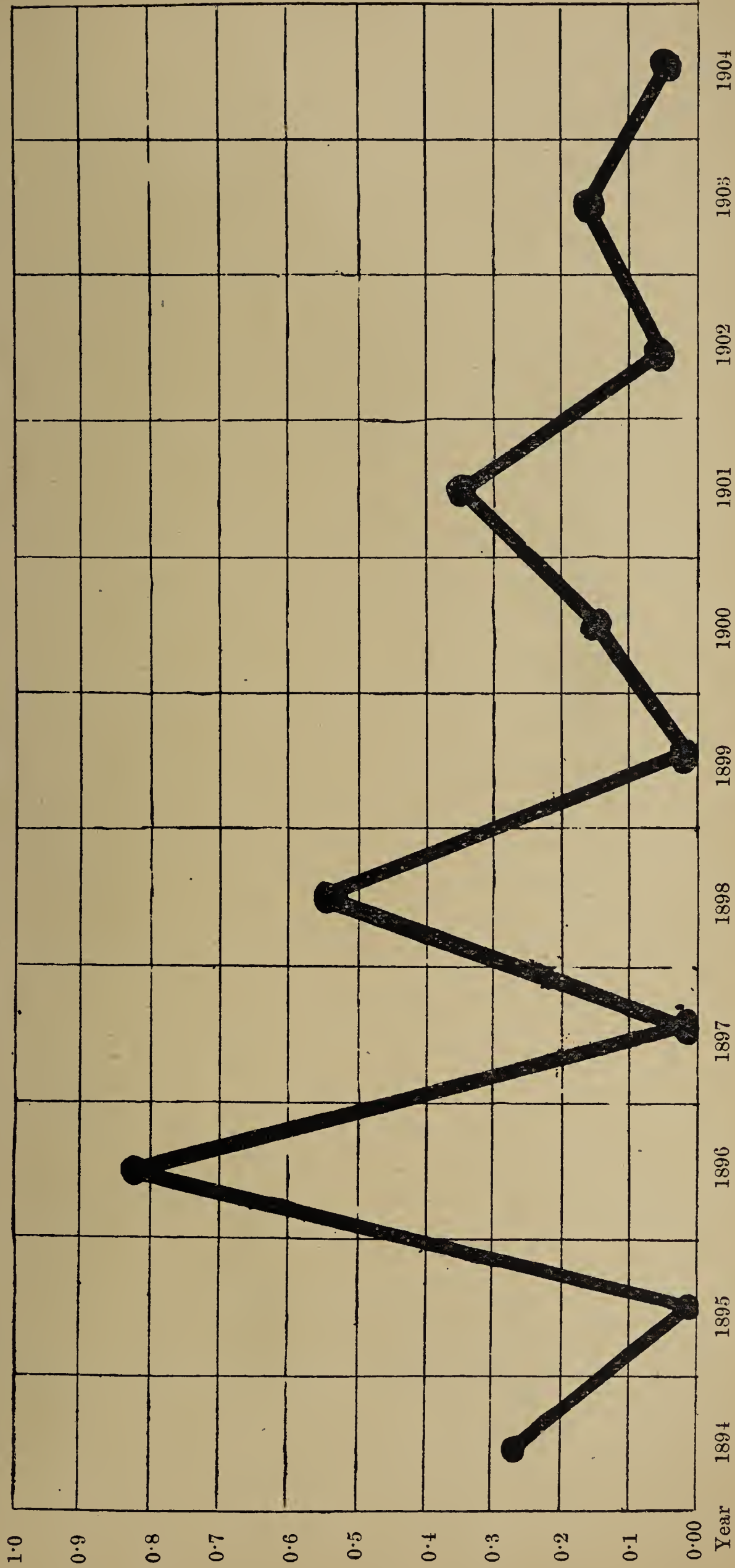
The ages at death were as follows :—

Ages	Under 1 yr.	1—5	5—15	15—25	25—65	65 & over
Phthisis (Pulmonary Tuberculosis)	—	2	1	14	31	2
Other tubercular diseases	8	9	2	1	1	—

The proportion of deaths due to Tubercular Diseases was 11·99 per cent. of the total number of deaths, while Small Pox, Measles, Scarlet Fever, Diphtheria, Erysipelas and Typhoid Fever, between them accounted only for 2·18 per cent of the total number of deaths.

The death rate from Phthisis alone during 1904 was 1·19 as compared with 0·88 in 1903, 1·03 in 1902, and 1·10 in 1901. No less than 30 out of 38 deaths from this disease fully inquired into

MEASLES.
CURVE OF ZYMOTIC DEATH RATE.
1894 to 1904.



occurred among persons who had recently come to reside in the Borough on account of their health. If these be excluded the local Phthisis death rate is reduced to 0·47. Among 7 cases of apparently local origin, a history of previous cases in the family was obtained in 4 instances.

Inquiries were made into local conditions of aspect and site and surroundings of the houses in which the deaths occurred. In one instance only were the facts obtained in any way suggestive. This was a case at Bournes Green, on the outskirts of the Borough—apparently a primary case—where the surroundings of the house were unsatisfactory, the subsoil being wet, and undrained. Bournes Green is a small village separated by about a mile of fields from the Urban part of the Borough, and is undrained. The older houses are provided with midden privies, while a few newer houses drain into cesspools. The district is low-lying, and tends to be damp, and there are more trees in this particular neighbourhood than perhaps in any other part of the Borough.

As to any preventive measures which had been taken prior to death, only in 6 instances were spitting-cups stated to be in use, and these were mostly cases which had been educated in this respect at a Sanatorium. In 2 other cases rags were used and afterwards burnt.

These facts point strongly to the necessity of having some form of notification of cases of Pulmonary Tuberculosis, so that organised preventive administrative measures may be secured, it evidently being the exception at present to find that the necessary precautions are being adopted.

The experience of towns in which voluntary or compulsory notification of Phthisis has been carried out for some years now, strongly indicates that such notification is necessary in the interest of the public health.

All houses in which deaths from Phthisis and other Tubercular Diseases occurred were visited, and cleansing or disinfection of the room which had been occupied by the patient, secured. In the majority of instances this was carried out by my department. In two instances the bed-mattress was burnt. Precautionary pamphlets were left at each house.

Cancer.

In my Report for 1903 I indicated the importance of instituting inquiries and recording facts and observations in connection with this disease, which might in time provide useful information.

Under the heading of Cancer 30 deaths during 1904 are included from causes comprised within this general term. The ages at death were—

Ages	5 and under 15	15—25	25—65	65 and upwards.
No. of Deaths	1	—	21	8

The deaths were distributed in the various parishes as follows :—

Parish	St. John's	St. Mary's	St. Albans	All Saints	Southchurch
No. of Deaths	11	3	8	7	1

The incidence per 1000 resident population is given in the following table :—

Year	1898	1899	1900	1901	1902	1903	1904
Rate per 1000 Population	0.70	0.70	0.61	0.73	0.95	0.72	0.71

Inquiries were made into 22 deaths, and I record some of the facts ascertained as follows :—

Cases resident in the Borough less than 12 months	9 cases
Cases " " from 1-2 years ...	6 "
Cases " " " 2-5 " ...	3 "
Cases " " " over 5 years	4 "

In 3 of the 4 cases resident in the Borough over 5 years a family history of Cancer was obtained as follows :

	Sex.	Age.	Certified cause of death	Family History.	How long resident.	Occupation.
1	M.	51	Primary Cancer of Stomach	3 of first wife's family died of cancer	27 years	Water fittings inspector
2	M.	75	Primary Cancer of Liver	Sister and niece died of cancer	20 years (on & off)	?
3	F.	47	—	Aunt died of cancer	5 years	

In 5 cases inquired into a primary Cancer had been operated on 9 years, 2 years, 1 year, $1\frac{1}{2}$ years, 15 years and $1\frac{1}{2}$ years previously. In only one of these cases was the person resident in Southend at the time of the first operation. In 11 cases the Cancer was connected with the digestive organs, in 5 cases in connection with the reproductive organs.

The majority of the cases being imported, no satisfactory information could be gained as to the nature of the surroundings of the house in which the Cancer originally developed. In two or three instances no information whatever could be given.

Factory and Workshop Act, 1901.

The Home Office has issued an official copy of the duties of local authorities under this Act in regard to factories, workshops, and workplaces.

FACTORIES include—(1) all places in which mechanical power is used in aid of the manufacturing processes, and (2) certain specified industries which (include the following which are carried out in Southend—letterpress printing works, bookbinding works, and electrical stations).

WORKSHOPS include—(1) certain specified works (including bakehouses, shipbuilding yards, carpet beating works, and bottle washing works) unless mechanical power is used which converts them into factories.

(2) Any other premises (not being factories) in which manual labour is exercised by way of trade, or for purposes of gain in or incidental to the making, altering, repairing, ornamenting, finishing, or adapting for sale of any article, and to or over which the employer of the persons working there has the right of access or control.

(3) Any workplace ("tenement workshop") in which "with the permission of or under agreement with the owner or occupier two or more persons carry on any work which would constitute the workplace a workshop if the persons working therein were in the employment of the owner or occupier."

These were included for the first time by the Act of 1901, and give the Council control over, for instance, journeyman tailor's workshops.

Under Section 103, so far as sanitation and means of escape from fire are concerned, laundries are to be treated as factories or workshops. Certain specified laundries are, however, excluded.

Workplace is not defined, but is a word of wider significance than "Workshop." The Secretary of State has been advised that the kitchens of restaurants, etc., though they are not workshops, come within the meaning of the term "workplace."

Factories.

In regard to these the Town Council has but little to do beyond seeing that means of escape in case of fire are provided; but with regard to bakehouses and domestic factories there are special duties.

Outside the Factory and Workshop Act, however, the Town Council has the power to enforce Section 22 of Part III. of the Public Health Acts Amendment Act, 1890, which has been adopted by the Council.

Workshops and Workplaces.

In regard to these the Town Council has important duties which may be classified under four heads—

- (1) Their sanitary condition generally.
- (2) Provision of means of escape from fire in workshops.
- (3) Special sanitary regulation for bakehouses.
- (4) Homework.

As regards sanitation, each year I report as to the conditions of cleanliness, air space, ventilation and drainage of floors. For these purposes the provisions of Section 91 of the Public Health Act, 1875, apply, and are supplemented by additional provisions in the Factory and Workshop Act, 1901. The other sanitary provisions in Part I. of the Factory and Workshop Act with regard to temperature and sanitary conveniences are not brought under the law relating to public health, and are therefore enforced by the factory inspectors.

By Sections 2, 3, and 7, workshops and workplaces which are not kept clean or which are overcrowded, or which are not ventilated

in such a manner as to render harmless as far as practicable any gases, vapours, dust or other impurities generated in the course of the work that are a nuisance or injurious to health, may be dealt with under Section 91 of the Public Health Act, 1875. By Section 8 (a provision introduced for the first time by the Act of 1901) in every *workshop or part of a workshop* in which other than men only are employed, in which any process is carried on which renders the floor liable to be wet to such an extent that the wet is capable of being removed by drainage, adequate means shall be provided for draining off the wet, and if not so drained may be dealt with as a nuisance under Section 91 of the Public Health Act, 1875.

As to Sanitary Accommodation. Part III. of the Public Health Amendment Act, 1890, being in force in Southend by Sec. 22, every building used as a workshop or manufactory, or where persons are employed or intended to be employed in any trade or business, must be provided with sufficient and suitable accommodation in the way of sanitary conveniences.

On a report from their Surveyor that this requirement is not observed in the case of any building, the Council may serve a written notice on the owner or occupier requiring him to make such alterations or additions as may be necessary.

It will, therefore, be convenient for the Buildings Committee, when considering the plans of any new building intended to be used as a factory, or workshop, or laundry, to see whether proper provision is made as to sanitary accommodation of the persons to be employed.

(ii). As to safety from fire, it is not within the province of this Report.

(iii). **Bakehouses.**

These are dealt with under Sections 97-102. A general power is given to the Council by Sec. 98 in the case of any bakehouse which is in such a state as to be on sanitary grounds unfit for use or occupation as a bakehouse, to bring the case before a court of summary jurisdiction.

I detailed the special sanitary regulations for bakehouses in my Annual Report for 1902. In this Report I also dealt fully with the requirements for Underground Bakehouses. In my Annual Report for 1903 I gave full particulars of the Underground Bakehouses in the Borough, and of the sanitary improvements which had been enforced before the Council gave a certificate of suitability.

In 1903, there were 4 underground bakehouses. A certificate of suitability was refused for one of them, which, therefore, in accordance with the Act, became, after January 1st, 1904, an illegal place for the baking of bread. It was vacated in December, 1903. The remaining 3 underground bakehouses having complied with the specified requirements, were duly certified.

In July, 1904, it was reported to me that an underground bakehouse was in illegal use at The Chateau de Hoo Restaurant, Southchurch Beach. I visited the premises, and found it was an underground bakehouse in the meaning of the Act; the surface of the floor being more than 3 ft. below the surface of the footway of the adjoining street, as well as of the ground adjoining or nearest to the room.

The occupier pleaded ignorance of the law, and forthwith discontinued the use of the premises as a bakehouse. Under the circumstances the Health Committee resolved not to take proceedings against him.

In October, Inspector Penn reported to me the use of a kitchen and scullery in a private house as a bakehouse. I communicated with the Chief Inspector of Factories, who kindly replied that in his opinion there was no legal obstacle to such use, provided the statutory requirements as to lime washing, &c., were observed. I informed the occupier that it was incumbent on him to be registered, and told him that in my opinion the premises were hardly suitable for the business, though I could raise no absolute legal objection. I advised him to secure more suitable premises. This he has since done. I had ample reason to take a sanitary objection to the use of these premises as a bakehouse, for on one occasion when I visited them, I found the housewife washing in the scullery, where there was a portable baking oven. In the kitchen, a child's muff lay upon

the bottom shelf of a stand, on which loaves of bread for sale were placed.

In connection with an application and plans submitted for an alteration to Geiser's Bakery in Southchurch Road, I was instructed to inspect and report on the existing premises, and the proposed alterations. I found the existing conditions unsatisfactory, though outside any legal objection, and strongly advised that facilities should be given for radical improvements. I subsequently again inspected the premises with the Chairman and two members of the Buildings Committee (Councillors Wright, J.P., Elliott Fletcher, and Nerney), and the Deputy Borough Surveyor. The matter was discussed with Mr. Geiser and an agreement came to.

During the year, Mr. Ackerman, proprietor of an underground bakehouse in Nelson Terrace, which had been duly certified by the Town Council, desired to put in an additional oven, for which purpose certain structural alterations were required. The Health Committee required Mr. Ackerman to submit plans drawn to scale, and Mr. Councillor Barker and myself, in company with the Assistant Borough Surveyor, inspected the premises and reported to the Committee that the suggested alteration would improve even on the present conditions. The sanction of the Council has now been given to the proposed alterations.

During 1904, there were 32 Bakehouses on the Register—3 of these are Factories and 29 Workshops under the Act. 360 visits of inspection were made by Mr. Penn, in addition to several visits by myself. Six notices were served on occupiers, and duly complied with.

(iv). Home Work (Secs. 107-115).

No occasion arose during 1904 to make me advise the Council to exercise their prohibitive powers under these Sections.

As to outworkers, there are not many in the Borough. Twice a year a circular reminder is sent out. During 1904, 3 lists came in, giving the names and addresses of 4 outworkers. These were visited in due course.

The following is a tabular statement of the work carried out during the year under the Factory and Workshop Act, 1901, on the lines required by the Secretary of State.

Factories, Workshops, Laundries, Workplaces & Homework.

1.—INSPECTION.

Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.

Premises.	Number of		
	Inspections.	Written Notices.	Prosecutions.
FACTORIES (Including Factory Laundries)	72	1	—
WORKSHOPS (Including Workshop Laundries)	498	14	—
WORKPLACES	198	1	—
HOMeworkERS' PREMISES	4	—	—
TOTAL	772	16	—

2.—DEFECTS FOUND.

Particulars.	Number of Defects.			Number of Prosecutions.
	Found.	Remedied.	Referred to H.M. Inspector.	
<i>Nuisances under the Public Health Acts:—*</i>				
Want of cleanliness	9	9	—	—
Want of ventilation	1	1	—	—
Overcrowding	3	3	—	—
Want of drainage of floors	—	—	—	—
Other nuisances	1	1	—	—
†Sanitary accommodations {	insufficient	1	1	—
	unsuitable or defective ..	6	6	—
	not separate for sexes ...	—	—	—
<i>Offences under the Factory and Workshop Act:—</i>				
Illegal occupation of underground bakehouse (S. 101) .	1	discontinued.	—	—
Breach of special sanitary requirements for bakehouses (SS. 97 to 100)	—	—	—	—
Failure as regards lists of outworkers (S. 107)	—	—	—	—
Giving out work to be unwholesome (S. 108)	—	—	—	—
done in premises which are (infected (S. 110)	—	—	—	—
Allowing wearing apparel to be made in premises infected by scarlet fever or smallpox (S. 109)	—	—	—	—
Other offences	—	—	—	—
TOTAL	22	22	—	—

* Including those specified in Sections 2, 3, 7 and 8, of the Factory Act as remediable under the Public Health Acts.

† Section 22 of the Public Health Acts Amendment Act, 1890, has been adopted by the Town Council. No standard of sufficiency and suitability of sanitary accommodation for persons employed in factories and workshops, has hitherto been enforced. The matter is under consideration.

3.—OTHER MATTERS.

Class.										Number.	
Matters notified to H.M. Inspectors of Factories :—										1	
Failure to affix Abstract of the Factory and Workshop Act (S. 133)										7 (since complied with)	
Action taken in matters referred by H.M. Inspectors as remediable under the Public Health Acts, but not under the Factory Act (S. 5)										Nil.	
Notified by H.M. Inspector											
Reports (of action taken) sent to H.M. Inspectors										Nil.	
Other											
Underground Bakehouses (S. 101)											
In use during 1903										4	
Certificates granted { in 1903										—	
{ in 1904										3	
In use at the end of 1904										3	
Homework :—										Number of	
<i>Lists of Outworkers*</i> (S. 107) :—										Lists.	Outworkers
Lists received										3	4
Addresses of outworkers { forwarded to other Authorities										None.	
{ received from other Authorities										None.	
<i>Homework in unwholesome or infected premises :—</i>										Wearing Apparel.	Other.
Notices prohibiting homework in unwholesome premises (S. 108)										None	—
Cases of infectious disease notified in homeworkers' premises										None	—
Orders prohibiting homework in infected premises (S. 110)										None	—
Workshops on the Register (S. 131) at the end of 1904 :—											
Important classes of workshops, such as workshop bakehouses, may be enumerated here.	Workshop Bakehouses									29	
	Factory „									3	
	Workshop Laundries									12	
	Factory „									9	
	Workshops, various									66	
Total number of workshops on Register										107	

House Accommodation.

The rapid growth of population no doubt throws a great strain on the Town Council as the Sanitary Authority. Byelaws are in force within the Borough with respect to new streets and buildings, framed on the model Byelaws of the Local Government Board, prohibiting polluted sites, requiring the preparation of a site to be properly asphalted or concreted, providing for proper materials for external walls and cross walls, providing for bonded angles, proper construction and foundation of footings and damp courses. Further byelaws deal with the mode of measuring heights of storeys and heights and lengths of walls, thickness of external and party walls, and cross walls, according to whether brick, stone, or other material is used, materials for roof, etc.

Further byelaws are in force with respect to the sufficiency of the space about buildings to secure a free circulation of air, and with respect to the ventilation of buildings. The minimum air space permitted in the rear of domestic buildings is 150 square feet, "The distance across such open space from every part of such building to the boundary of any lands or premises immediately opposite or adjoining the site of such building, to be not less in any case than 10 feet," but varying, on an increasing scale, according to the height of the building.

Further byelaws provide for a sufficient number of suitable windows suitably placed for ventilation, and for the provision of a ventilating space under floors.

There is also a byelaw (58) which requires that "*Every person who shall erect a new domestic building shall cause every habitable room of such building which is without a fireplace, and a flue properly constructed and properly connected with such fireplace, to be provided with special and adequate means of ventilation by a sufficient aperture or air shaft which shall provide an unobstructed sectional area of 100 square inches at the least.*"

It is a question—although this byelaw is approved of by the Local Government Board—whether such ventilation as is provided for by this byelaw is

an adequate substitute for a fireplace and flue. I rank myself among those Medical Officers of Health who think that every habitable room should be provided with a fireplace and flue, as well as with a window opening into the external air.

No mention is made in the byelaws as to the situation of the larder. In my opinion this is a matter which deserves attention, and I venture to think should be provided for.

Too often the larder is found in an undesirable position, next to a water closet, or the kitchen flue, or under the stairs—dark and ill-ventilated. The larder should be a cool place, facing north for preference. There should be provision for a through current of fresh air, and for the exclusion of flies by the use of perforated zinc in place of a glass window.

This point is of particular importance in the summer, and would be I am sure a further preventive measure of considerable value in the matter of Epidemic Diarrhœa.

With respect to the drainage of buildings, byelaws provide for the drainage of the subsoil of building sites in a proper manner where necessary, for the level of the lowest story of a building to be such as to allow of effectual drainage, and for the construction of house drains on definitely specified lines.

Byelaw 66 contains general provisions as to drains.

In May, 1903, the Local Government Board issued Model Byelaws for Rural Districts. Byelaw 20 (5) in this series contains a provision which I

consider an important and distinct improvement on that portion of Byelaw 66 in the Byelaws for Urban Districts, which deals with the waste pipes from baths, sinks, and lavatories.

The Model Byelaw 20 (5) for Rural Districts reads "He shall cause the waste pipe from every bath, sink (not being a slop sink constructed or adapted to be used for receiving any solid or liquid filth), or lavatory and every pipe in such building for carrying off foul waste water to be properly trapped, and to be taken through an external wall of such building, and to discharge in the open air over a channel leading to a trapped gully grating."

In my opinion this is an improvement on the clause in the Urban Byelaws in two important respects—it requires that these waste pipes shall be "properly trapped," and it omits the "eighteen inches" distance between the pipe and gully.

I hope it may be possible for the Town Council to adopt this clause in lieu of the existing paragraph of Byelaw 66.

The byelaws in force in the Borough with respect to water closets, earth closets, privies, ash-pits and cesspools, in connexion with buildings, are the model byelaws as issued by the Local Government Board, as are also the remaining byelaws with respect to the closing of buildings or parts of buildings unfit for human habitation, and those relating to the giving of notices, deposit of plans and sections by persons intending to lay out streets or to construct buildings, inspection by the Sanitary Authority, and the power of such authority to remove, alter or pull down any work begun or done in contravention of the byelaws.

These byelaws were adopted by the Southend Local Board, and allowed by the Local Government Board in the year 1881.

Two Building Inspectors are employed by the Corporation under the Borough Surveyor to see that the byelaws are complied with. Several infringements of the byelaws were dealt with by the Council during the year.

In January I received a verbal complaint as to dampness of a new house. On inspecting the premises I found that garden mould had been banked up against the outside walls above the damp course level, and that the ground-floor rooms had their floors covered with linoleum. These errors were rectified.

Sewerage and Drainage.

Western Valley Sewerage.

SEA VIEW ESTATE. After protracted negotiations and some correspondence with the Local Government Board the extension of the Western Valley Sewer was commenced in February, and was carried in the course of the year as far as Butt's cesspool. The houses in Beach Road which formerly drained into the cesspool (a constant source of nuisance) were connected up with the new sewer before the end of the year. Although this extension of the main sewer has been completed the estate owners have not connected up to the same. The Corporation are now taking the necessary steps to sewer the roads under the Private Street Works Act. Other building estates on the Western boundary of the Borough are fast opening up, and further sewerage schemes will be required in the immediate future. The Highways and Works Committee are at the present time considering plans and estimates for the construction of a sewer in the locality of Cliff Gardens.

Leigh Road Sewer Extension.

This sewer has been extended in a westerly direction as far as the physical configuration of the ground will permit, the contract price being £730. This sewer now extends to Carlton Drive. A new sewer with other connections will be required for the remainder of the Leigh Road west of this point. This will have to be considered shortly in connection with the sewerage of the rapidly opening out Leigh Cliff Estate.

Bournemouth Park Road.

In July it was resolved by the Town Council that application be made to the Local Government Board for sanction to the borrowing of the sum of £600, being the estimated cost of the construction of a sewer extending from Southchurch Road to a point near Central Avenue. This work is in progress.

Extension of Sewer, Fairfax Drive.

With a view to completing the construction of this sewer the Town Clerk was instructed in July to serve the necessary notices under Section 16 of the Public Health Act, 1875, upon the owner or owners of private land on the south side of the brook.

In October the Town Council resolved that application be made to the Local Government Board for sanction to the borrowing of £250, the estimated cost of a 9-inch sewer in North Street, Prittlewell, in lieu of the existing defective brick drain; and also of £250, the estimated cost of a sewer in Eastwood road, extending from Leigh road to a point near Southbourne Grove. In January, 1905, the Borough Surveyor was instructed, as a matter of urgency, to relay the sewer in North Street.

Surface Water Drainage.

Owing to the very rapid increase of population, the Borough Surveyor reported the necessity of relieving the Sewers by making arrangements on the separate system for surface water in certain areas. I attended before the Highways Committee in January, 1904, in connection with the proposed surface water scheme for the High Street area, and pointed out the importance of making provision for the first street washings to be carried into the ordinary sewer. The Surveyor designed a weir construction which appeared to effectively meet this point, and the work was then proceeded with as a matter of urgency. A Local Government Board Inquiry was held in January, and in March the Local Government Board suggested an amendment with regard to the method of constructing the outfall in connection with this sewer. The Borough Surveyor reported as to the steps proposed taking to meet the requirements of the Board.

West Road Surface Water Sewer.

A Local Government Board Inquiry was held in April, and sanction given to the borrowing of £1,219 in connection with this scheme. This work was completed during the year.

Street Watering.

This is a matter of great municipal importance, and requires efficient administration. It is my opinion that the remarkably low

comparative death rate of London, in spite of its large size, is largely due to the hard impermeable nature of the surface of its streets in general, and to the very efficient swilling of the streets with water, especially in the hot weather.

In a Special Report on Epidemic Diarrhœa last September, I strongly impressed upon the Council that money spent on efficient street watering during a hot, dry summer, is money well spent. To secure the best results, it is necessary that the sides and channellings of the streets should be well flushed, and that the scavengers should follow immediately in the wake of the water cart, so that the cleansing of the streets can be effected while the offensive dust is wet.

If this were done regularly, one of the causes of diarrhœa contamination of food and of various forms of sore throat, for which municipal administration is to some extent responsible, would be properly met.

Refuse Destructor.

I referred again in September in a Special Report on Epidemic Diarrhœa to the need of providing a Refuse Destructor. The Town Council forthwith instructed the Health Committee to consider the question, and to report definitely thereon to the next meeting of the Council. The Borough Surveyor submitted plans and a report. The Town Clerk was instructed to advertise for tenders for the supply and erection of a Refuse Destructor. A Sub-Committee consisting of the Chairman of the Health Committee and Mr. Councillor King, together with the Borough Surveyor and myself, visited various types of Destructors in operation at Birmingham, Nottingham, Salisbury and Torquay in November. At the Town Council Meeting in December, it was resolved, on the recommendation of the Health Committee, "That a Refuse Destructor be provided for the Borough of a type to be subsequently approved by the Council, and that the same be erected upon the Corporation land at the London Road Dépôt."

It was further resolved that application be made to the Local Government Board for sanction to the borrowing of £10,000 for the purpose. This is a satisfactory advance in this matter, which has remained in abeyance for years.

Schools.

In January, I reported on the Sanitary arrangements of the Leigh Road Girls' and Infants' departments, recommending more frequent flushing, and that a few closet seats should be made smaller for the use of young children. In the London Road Schools, Girls' and Infants' departments, I reported that the closets were insufficiently lighted.

In April, the new Southchurch Hall Schools were opened, and in the beginning of the New Year (1905), the new Infants' School at Leigh Road was completed.

In February, some cases of Measles occurred in connection with the Infants' department of the London Road Elementary Schools, but exclusion of other children from infected families, together with advisory pamphlets to parents, prevented any serious spread of the disease.

In March, Mumps was prevalent at the Southchurch Schools to a serious degree ; the disease having been imported from Wakering. After a trial of excluding infected families, it became evident that the disease had acquired too firm a hold before it was brought to my notice. I therefore closed the Schools for three weeks, by extending the usual Easter holidays.

Apart from an occasional case of Diphtheria or Scarlet Fever, necessitating the exclusion of other members of individual families from School, the public Elementary Schools were remarkably free from notifiable infectious diseases during the year 1904.

Though Measles was prevalent in some degree in the Borough throughout the year, and cases occurred in the various Schools, I received early intimation of these cases, on forms provided to the Head Teachers, and the measures adopted were successful in checking each outbreak.

Private Schools.

Outbreaks of Diphtheria occurred in connection with several private Schools during the year. I have already alluded to these, and the result of preventive measures in my remarks on Diphtheria.

Very onerous work devolved upon me in the bacteriological examination of many scores of swabs in connection with these private Schools.

Proposed Bill in Parliament.

The Corporation again promoted a Bill, which included many important sanitary provisions in regard to nuisances, streets, buildings, sewers and drains, the sale and supply of infected milk, ice creams, shell fish and other articles, and power for the Medical Officer of Health to examine children in Schools; but the Bill was unfortunately again thrown out at the Statutory Meeting of Rate-payers.

Sanitary Department.

Offensive Trades.

During the year a draft of byelaws to regulate the businesses of rag and bone dealers was drawn up by the Town Clerk and myself, and after approval by the Health Committee was submitted to the Local Government Board. The Local Government Board in December asked for an interview between Dr. Franklin Parsons and one of the Board's Inspectors, as representing the Local Government Board, and the Town Clerk and myself, as representing the Corporation. At this conference the suggested byelaws were fully discussed, and some points of amendment suggested which were agreed to.

In view, however, of a recent application for a license to establish a knacker's business within the borders of the borough, more extensive byelaws as to offensive trades will become necessary if a license is granted. It has been decided therefore to postpone further action until fuller byelaws have been discussed.

Slaughter Houses.

There are seven registered slaughter houses which have been regularly inspected during the year, 137 visits of inspection being made. One notice was served. In January Inspector Penn brought to my notice the internal organs of a sheep, which I condemned and had destroyed.

In April Inspector Penn reported a case of slaughtering on unlicensed premises. The Health Committee considered the matter, and the offender pleading ignorance was let off with a warning.

There can be but little doubt as to the advisability of providing a public municipal abattoir. It is impossible for the Inspector to visit all the slaughter houses at the times of killing. The private slaughter houses could then be done away with and the meat dressed under proper observation and under the most cleanly conditions and surroundings.

Dairies, Cowsheds, and Milkshops.

During 1904 there were 34 dairies and 4 cowsheds on the register. During the year 5 dairies were discontinued as such and 5 new applications for registration were received. In one of these instances the premises were unsatisfactory and the dairy was closed. Three new dairies were erected, the plans having first been submitted to me for approval. Four hundred and forty-eight visits of inspection were made to dairies during the year, and 22 notices served.

In addition 68 shops other than dairies, where small quantities of milk are sold, were visited 144 times. In four instances the occupiers discontinued selling milk.

Twenty-eight dairies were measured as to cubic space, lighting and ventilation. One being unsatisfactory was improved.

There are four cowsheds on the register. Sixty-one visits of inspection were made by the Inspector and two notices served.

Farms and Cowsheds.

In January I visited Thorpe Hall Farm to inquire into the general conditions, and took with me Mr. Kelly, M.R.C.V.S., Veterinary Surgeon to the Corporation, to inspect the cows at this farm, with special reference to any possible tuberculosis. Mr. Kelly reported 1 cow as suffering from Pneumonia, and 2 cows as suffering from Udder affections. The Udder affections were of an inflammatory nature, but tubercle bacilli were not found. I learnt that soon after my visit of inspection these two cows had been got rid of. Though in many ways the conditions at this cowshed had been improved in respect of light, ventilation and the cleanliness of the yard outside, I found the cows themselves dirty. I warned the manager that this constituted a breach of Regulation 17 of the Model Regulations of the Local Government Board in force in this Borough, under which action would be taken if the offence were found to be repeated.

In the same week I visited the works in progress in connection with the alteration of an old outbuilding into a cowshed, at Priory Farm, Sutton Road. I required even more light to be provided,

the rendering of the lower 5 feet of the walls, and that a wooden partition between the cowshed and a grain store should be painted and varnished. The occupier proposed to use only part of the shed as a cowshed, and wanted to limit the alterations to such part, but I urged that the whole floor should be cemented on concrete and properly drained.

In the same month Inspector Penn reported to me the use of an unregistered cowshed at Coleman's Farm. I found this cowshed to be undrained, with rough earth floor, badly lighted and insufficiently ventilated. The use of this place as a cowshed was forthwith abandoned.

In February I visited Southchurch Hall Farm and found general conditions of cleanliness satisfactory. I found that attention was being paid to the washing of the cow's udders before milking. A sick "dry" cow was isolated.

In April I visited Folly Farm. I found the arrangements for milking the cows and cooling the milk directly after, satisfactory. Work was in progress for the better paving and drainage of the cowsheds.

In the same month I again visited Thorpe Hall Farm, and found the cowshed very dirty. I gave instructions for a notice to be served, requiring in addition repaving of the cowshed and more adequate drainage.

In the same month I visited a dairy in Balmoral Road, and found the outside w.c. dirty, and without a flushing cistern, and the cement paving of the dairy defective. I instructed the Inspector to serve the proper notices.

In May I again visited the Southchurch Hall Farm cowshed, and having found dirty coats hung up in close proximity to the overalls now used for milking, I had this remedied. The cowshed was clean.

In August I visited Folly Farm in the course of a systematic inspection. I found the cowshed floor unpaved and very unsatisfactory. In the dairy I found plain wood tables and slabs in use. I wrote to the proprietor requiring him to remedy these matters, and the work was forthwith put in hand.

Vigilant inspection has brought about considerable improvements in all four cowsheds in the Borough, and the one other unsatisfactory cowshed at Coleman's Farm has been discontinued. The object has been to realise, as far as possible, the conditions I laid down in my last Annual Report, pp. 77 and 78.

The Regulation made under Art. 13 (d) of the Dairies, Cowsheds, and Milkshops Order, referred to in my last Annual Report, dealing with the protection of milk from dust, flies, and other sources of possible contamination, having been approved by the Local Government Board, with an additional Regulation, providing for the enforcement of a penalty in case of non-compliance, was adopted by the Council, and came into force within the Borough on the 25th day of July, 1904.

Houses for the Working Classes.

Four old houses were informally closed during the year, to make room for new buildings.

Under the provisions of the Housing of the Working Classes Act, 1903, the Town Council applied for a further loan of £2,947, in respect of buildings, etc., making a total of £14,447, in connection with the Workmen's Dwellings in Ruskin Avenue.

Common Lodging Houses.

On March 30th, 1904, in consequence of a communication from the Deputy Medical Officer of Health for Chelmsford, that a tramp, who had developed Small-pox in that town, had recently been staying at Scott's Lodging House in Prittlewell, I visited the same. I reported to the Health Committee on April 5th, that this was a place in which persons of the poorer class were sometimes received for short periods, and though strangers to one another, allowed to use one common room, and therefore in my opinion it was incumbent now on the Town Council, under Sections 76 and 80 of the Public Health Act, 1875, to register this house as a Common Lodging House, and to make byelaws,

- (1) For fixing, and from time to time varying the number of lodgers, who may be received into a Common Lodging House, and for the separation of the sexes therein ; and

- (2) For promoting cleanliness and ventilation in such houses ; and
- (3) For the giving of notices, and the taking precautions in the case of any infectious diseases ; and
- (4) Generally for the well-ordering of such houses,

And I recommended that the model byelaws, issued by the Local Government Board, should be adopted by the Town Council.

The Town Clerk and myself were instructed to prepare and submit draft byelaws.

The Committee having considered these, and the Local Government Board having provisionally approved the same, the Town Council in November, having resolved to approve the byelaws as submitted, formally adopted the same in January, 1905.

The approved byelaws are framed on the model byelaws

Disinfection.

This has been carried out as in former years by means of the vaporisation of formaldehyde tablets or by formalin spraying, and occasionally by sulphur oxides.

In June I visited the Small Pox Hospital Ships at Long Reach, in order to note the method of disinfection by the Clayton process. In this process SO_2 and other oxides of S are forced into the room or space to be disinfected until a percentage of 12 to 15 is reached. The atmospheric air of the room or space is pumped out and drawn through the burning S. Bacteriological tests with the usual pathogenic organisms have proved satisfactory after exposure for six hours, but anthrax spores have proved resistant. I was informed that a small apparatus on wheels with tubes, etc., could now be had for £250.

An advantage claimed for the process is that all disinfection can be carried out in the house, obviating the necessity of providing a steam disinfecter, and of fetching and returning articles for and after

disinfection. It is further claimed that in the event of a fire if all doors and windows are closed to prevent fresh air from entering, the oxides of S pumped in will be in a sufficient percentage to extinguish the fire. The Government, and other authorities, and certain shipping firms, have adopted the process, which is also highly commended by Professor W. J. R. Simpson. When the time comes for the Borough to require further means of disinfection this process might be borne in mind.

Water Supply.

The water supplied by the Southend Water Works Company was frequently examined by myself during the year both bacteriologically and chemically, particularly during the month of August when the physical properties of the water led to much adverse criticism and complaint. The chemical and bacteriological results were, however, always satisfactory.

The following is the result of examination of a sample of tap water taken at the Borough Sanatorium on August 12th, and the chemical content constitutes a fair average result. The bacteriological content is, however, generally less than in the instance given.

PHYSICAL PROPERTIES.					Clear, Temp. 19° C.
Chemical Properties.					Grains per gallon.
Chlorine	...	...	...	...	16.8
Nitrates	...	...	...	...	Inappreciable
Nitrites	...	...	...	...	None
Hardness (Total)	...	...	...	...	7.6°
Free Ammonia	...	...	...	...	A trace
Organic Ammonia	...	...	...	...	0.002
Oxygen absorbed at 80° Fahr. in 15 minutes	...	...	...	...	0.004
Iron, Lead, Copper	...	...	...	...	A trace of iron

BACTERIOSCOPIC EXAMINATION.

	Agar at 37° C.	Gelatine at 21° C.
Number of Colonies of General Bacteria per 1 c.c. as seen by the naked eye after 72 hrs.	300	350
Number of Bacillus Coli in 10 c.c.	...	None

The Water Works Company had independent examinations made by Dr. Thresh, County Medical Officer. His data are of interest therefore for purposes of comparison. (It will be noted that this sample was taken while the water supply was turbid.)

Sample of water from tap at 11, Cambridge Road. Southend-on-Sea, labelled (Letter). Taken 4.15 p.m., August 9th, 1904.

Particulars of Source : The Water Works Mains.

Physical examination :—

Turbidity : Opalescent, due to particles of sand, clay, and oxide of iron.

Colour : Brown, due to suspended matter,

Odour : None.

Determinations.	Grains per gallon.	Parts per 100,000.
Chlorine	17.9	25.6
(equivalent to chlorides 60% Cl.)	29.8	42.6
Nitric Nitrogen	0.05	0.07
(equivalent to nitrates 17% N.)	0.30	0.42
Nitrites	—	—
Hardness	14°	
Free Ammonia	0.0000	0.0000
Organic Ammonia	0.0038	0.0055
Oxygen absorbed at 98° in 3 hours ..	0.0476	0.0680
Lead, Copper, Zinc, Iron	Trace	of Iron

Complaints as to the cutting off of the water at certain hours, and as to its discolouration, and contained “mud” having been addressed both to myself and the Town Clerk, I reported as follows to the Health Committee :—

“For a week or ten days in the early part of the month (August) the borough generally suffered the inconveniences of an intermittent water supply. An explanation of this has been made by the manager of the Water Works Company. I inquired fully into the matter and verified as far as I could the alleged simultaneous breakdown of three important wells. It is a remarkable statement on the part of the Water Works Company that the demand on them has been 50 per cent.

greater than during last summer. This affords material for reflection, and I shall report again on this subject.

“In the meantime I have the satisfaction to report that though I carried out frequent chemical and bacteriological examination of the water supplied during August, I found no evidence of any organic pollution at any time. By physical examination, the brown discolouration (and, after standing, the deposit of fine sand and clay) during the period of intermittency was obvious to all consumers, and not unnaturally occasioned some concern, sarcasm, and indignation. The deposit contained some oxide of iron, which would largely explain the dark discolouration. No doubt the discolouration and deposit were largely due to the first rushes of water after each period of intermittency, stirring up the accumulated deposits of months at the bottom of the pipes. For the same reason no doubt the bacterial content of the water was rather high during the period of intermittent supply, but on no occasion were other than common water bacteria found.”

Southend was by no means the only place which suffered from shortage of water last summer. Beckenham (Kent), which is practically a London suburb, suffered severely. The great city of Birmingham received the reinforcement of the water supply from Wales only in the nick of time. In Southend the water was never cut off for more than a few hours during a few days, but the matter was vexatious to a health resort with its population doubled by visitors. The Water Works Company is pushing on with new wells to meet the demand.

On September 21st, in company with the courteous manager, Mr. C. S. Bilham, I visited the Water Works at Fobbing, Vange, Thundersley, and Burches. I found two wells in use at Fobbing provided with duplicate machinery. The water is temporarily drawn from the lower Tertiary deposits, and I noticed it had a distinctly appreciable ferruginous taste. The wells will eventually be carried down to the chalk. For this purpose one well was shut down in my presence to enable workmen to carry on this work with all expedition during the winter months when the strain on the Company is considerably lessened. At Vange the first turf had just been cut in the construction of a second well at this pumping station.

In my Annual Report for 1901, I gave full particulars of the wells in use up to that date.

I now supplement these by the particulars of the wells brought into use since that date.

SOUTHEND WATER WORKS COMPANY—
PARTICULARS OF WELLS AND STRATIFICATION.

Wells.			Fobbing Main.	Fobbing Auxiliary.	Vange Main.
Year brought into use	...	...	1902	1904	1904
Stratification :—					
Drift	}	...	165 feet	154 feet	228 feet
London Clay					
Lower London	}	...	150 $\frac{3}{4}$ feet	142 feet	?
Tertiary Deposits					
Depth to Chalk	...	...	315 $\frac{3}{4}$ feet	296 feet	
Company's Works measuring point being approximately ground surface ordnance datum			70 feet	65 feet	44 feet
Well Diameter	...	...	15 feet	7 feet	15 feet
Depth of bottom of Brickwork			140 feet	136 feet	198 $\frac{1}{2}$ feet
				Bottom of Iron Tubing	209 feet
14 feet cylinders depth below Works measuring point			204 $\frac{1}{4}$ feet	160 feet	?

For the above particulars I am indebted to the courtesy of Mr. Bilham, the Water Works Manager.

Summary of Improvements for the Year 1904.

Continuation of Systematic House to House Inspection.

Drainage of Sea View Estate.

Byelaws for Common Lodging Houses.

Drainage of Prittlewell.

Surface Water Sewers laid in High Street and West Street.

Extension of Sewer across Chalkwell Park.

Paving of High Street with wood.

Extension of Western Valley Sewer.

Improved sanitary condition of Cowsheds, Dairies, and Milkshops

New Western Marine Parade.

Many streets made up with granite in place of flints.

Provision of Motor Water Van.

Improved Collection of House refuse.

IN PROGRESS AND UNDER CONSIDERATION.

Repair of Scarlet Fever Block Sanatorium.

Enlargement of Sanatorium.

Erection of Refuse Destructor.

Byelaws for Offensive Trades.

The Borough Laboratory.

A large amount of work was carried out by myself in connection with infectious diseases, the water supply, and other matters, including shell-fish, sea water, and mud.

During 1904 no less than 1,023 examinations were made in connection with the prevention of infectious diseases, as compared with 727 in 1903, 816 in 1902, 272 in 1901, and 6 in 1900. Five hundred and sixty-nine swabs were submitted by doctors in connection with suspected diphtheria, or during convalescence after diphtheria among patients that had been treated at home. In 117 instances the diphtheria bacillus was found to be present. Forty-nine specimens of blood were submitted for examination in connection with the diagnosis of diseases, which in some respects simulate the symptoms of typhoid fever. In only six instances was a positive Widal reaction obtained. Thirty-two specimens of sputum were submitted for examination for the tubercle bacillus, which was found in ten specimens.

Three hundred and forty-eight examinations were made in connection with hospital administration. On four occasions the diphtheria bacillus was found to be present in the throats of persons admitted to hospital suffering from scarlet fever. This enabled me to take proper preventive measures, and in no case was there any further spread. I have also during the year carried out a large amount of work for the Law and Parliamentary Committee.

Borough Sanatorium.

Since 1891 I have each year pressed the necessity of increasing the present accommodation. A larger administrative block is urgently required, as well as a more adequate laundry on the lines I mentioned in my last Annual Report. In September last I again brought the matter before the Health Committee, as well as the necessity now of providing further ward accommodation. I impressed upon the Committee that the present time, while there was a marked decrease of notifiable diseases, was the most propitious time for getting the work in hand. The Committee considered my report and instructed the Borough Surveyor to submit a report as to the approximate cost.

In December the Committee appointed the Chairman and Councillor Newitt a sub-committee to consult with myself and the Borough Surveyor to bring up a scheme. This sub-committee has met once.

I have advised the Committee to consider plans for a new administrative block altogether. The plans submitted last year by the Borough Surveyor for the enlargement of the present block at an estimated cost of £3,000, show clearly that no further additions can be made. The plans now prepared by the Borough Surveyor in consultation with myself include a new administrative block, a new ward pavilion with two small wards attached, and an improved laundry.

The Surveyor's estimate is £8,500.

During the past year the new fittings and appliances for fire extinguishing purposes have been fixed.

On January 1st, 1904, there were ten patients in the Sanatorium, and 100 patients were admitted during the year in addition to two members of the staff, making a total of 113 patients treated in the Hospital during the year; in addition the case of smallpox was admitted to the Smallpox Hospital.

The following table gives a summary of the patients treated in the borough hospitals during 1904 :—

DISEASE.	Remaining in the Sanatorium Dec. 31, 1903.	Admitted during 1904.	Total number treated during 1904.	Number discharged in 1904.	Number dying in 1904.	Remaining in the Sanatorium Dec. 31, 1904.
Scarlet Fever	5	41*	46*	43	—	2
Diphtheria	2	47*	49*	47	—	1
Typhoid Fever	3	14	17	15	1	1
Smallpox	—	1	1	1	—	—
TOTALS	10	103*	113*	106	1	4

* Including 2 members of the Staff, 1 Diphtheria and 1 Scarlet Fever.

The average stay of each patient in the Sanatorium was 37 days. The case of smallpox was in the smallpox hospital 40 days.

The table given above shows a fine record, not one of the 103 patients admitted to hospital during the year died, while only one death (from typhoid fever) occurred among the 113 persons treated during the year. The one death was disappointing, because the patient was tided through a very long and severe attack of typhoid fever, to die eventually of pure starvation through incapacity to absorb any form of nutriment—even if pre-digested.

The following table shows the number of patients admitted to the Sanatorium each year during the past seven years :—

	1898	1899	1900	1901	1902	1903	1904
Patients attended by Medical Supt.	87	93	73	95	173	151	83
„ „ other Doctors	68	56	89	78	93	25	20
Total	155	149	162	173	266	176	103

The next table shows the number of cases of each disease treated in the Sanatorium and Small Pox Hospitals for the past seven years :—

DISEASE.	1898		1899		1900		1901		1902		1903		1904	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Scarlet Fever ...	77	3	113	1	107	1	106	3	108	1	74	1	46	0
Diphtheria ...	23	2	4	0	10	1	54	3	118	11	59	2	46	0
Typhoid Fever .	54	12	32	6	44	5	45	7	67	6	58	6	14	1
Other Diseases ...	2	0	0	0	1	1	1	1	9	1	5	0	6	0
Smallpox ...	0	0	0	0	0	0	1	0	25	5	5	0	1	0
	156	17	149	7	162	8	207	14	327	24	201	9	113	1

In the following table the percentages of deaths from each disease treated in the Borough Sanatorium since 1898 are calculated according to the method of the Registrar General, by adding together the admissions, discharges, and deaths; dividing this total by two and calculating the percentages on the resultant. The figures in parentheses show the total number under treatment each year for each disease :—

	1898	1899	1900	1901	1902	1903	1904
Total Case Rate ...	(162) 11·41	(166) 4·66	(177) 5·24	(207) 8·11	(302) 7·02	(196) 5·08	(113) 0·95
Scarlet Fever ...	(81) 4·11	(125) 0·88	(120) 0·99	(106) 3·58	(108) 1·10	(74) 1·56	(46) 0·00
Diphtheria ...	(23) 9·30	(4) 0·00	(10) 10·00	(54) 6·25	(118) 10·04	(62) 3·63	(46) 0·00
Typhoid Fever ...	(56) 20·9	(37) 17·9	(40) 12·9	(45) 17·72	(67) 9·09	(58) 10·34	(14) 6·66
Other Diseases ...	(2) 50·0	—	(1) 100·0	(1) 0·0	(9) 11·11	(5) 0·0	(6) 0·00

The figures for 1904 are eloquent in themselves, and need no further comment.

The number of regular nurses employed at the Sanatorium is 7, besides the matron. One extra charge nurse was employed for 5½ months during the year.

As I make an endeavour to treat diphtheria and typhoid fever in separate wards with separate nurses, a regular staff of matron and seven nurses is necessary for the proper administration of the hospital. One nurse acts as ambulance nurse.

I have abstracted the following items of expenditure and receipts for the year ending March 31st, 1904, from the Borough Accountant's abstract of accounts.

HOSPITALS EXPENDITURE.

SANATORIUM—

Salaries and Wages—

Medical Officer	...	...	57	7	9	
Matron	...	...	65	0	0	
Nurses and Probationers		...	148	19	9	
Servants and Wardmaids	...		105	5	7	
Laundresses	...	...	74	16	6	
Porter and Workmen	...		260	17	1	
						712 6 8
Uniforms, Clothing for Patients, Linen and Drapery						48 8 11
Provisions	...	...	...	...	...	636 6 10
Crockery and Ironmongery		...		...		20 19 2
Medicines, Surgical Appliances and Disinfectants				...		70 17 3
Repairs and Alterations	...	...		...		7 14 6
Rates, Taxes and Insurance	...	...			..	28 9 9
Rent of outside House and Lodgings	...			...		42 4 0
Water Supply	...	...	...		...	29 9 9
Gas Supply	...	...	...	...		92 2 3
Coal, Coke and Firewood	..	...			...	93 14 1
New Furniture and Fittings		...		...		10 12 2
Re-making Mattresses	...	..			...	6 15 0
Plumbing and Gas Fittings		...		...		5 6 10
Advertising, Printing, Stationery, Stamps, &c.					...	11 8 2
Rent of Telephones	...	...		...		7 13 0
Agreement and Contract Stamps			...		...	7 13 5
Garden	...	...	...	...		14 11 2
Repairing Ambulance	...	...			...	3 5 0
Removing Patients to Hospital		...		...		31 3 0
Team Labour	...	...	...		...	5 7 2
Travelling Expenses	...	...		...		1 12 0
Timber, Bricks, Cement	...	...			...	4 2 4
						<u>£1892 2 5</u>

SMALLPOX HOSPITAL—

Maintenance	...	...	...	...	22	4	11
Laundry	...	...	...	...	4	10	0
Nursing	...	...	...	...	12	12	0
Ambulance and Cartage	...	...	...	...	7	18	6
Gas, Water, Coal	...	...	...	..	3	14	10
Fittings and Utensils	...	...	...	...	2	6	6
Clothing, Linen, Drapery	...	...	...	...	3	16	11
Travelling Expenses	...	...	..		0	5	0
					<u>£57</u>	<u>8</u>	<u>8</u>

HOSPITALS INCOME.

Establishment Grant—Essex County Council	...	...	...	...	275	18	0
Receipts from Patients	...	...	...	...	197	10	11
Sale of Antitoxin	0	12	8
Sale of Potatoes	2	5	0
					<u>£476</u>	<u>6</u>	<u>7</u>

Net Expenditure—Sanatorium	£1,415	15	10
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Sale of Foods and Drugs Acts, 1875-1899.

The following samples were taken by Inspector Card under the Act from June 1st to December 31st, 1904.

Samples Analysed.	Samples Adulterated.	Nature of Adulteration.	Prosecutions and Results.
26	4	(1) Boracic acid, 24 grains per pint	Fined 10/- and 4/- costs
		(2) 11% deficiency in fat ..	Withdrawn Retained sample having burst
		(3) 10% deficiency in fat ..	Dismissed
		(4) 36% deficiency in fat ..	Fined £1 and costs 4/-

I regret to note that so small a penalty as a fine of only £1 was inflicted on a fraudulent milk vendor, whose milk was found on analysis to be 36 per cent. deficient in fat, based on the low minimum standard of the Board of Agriculture.

Proceedings relating to Nuisances under the Public Health Acts during the year 1904.

1904.

9th Sept. Proceedings against JOSEPH SMITH, Thundersley, for removing
manure during prohibited hours.
Fined 5/- and 4/- costs.

30th Sept. ,, ,, W. HUNTER, Leigh, ditto.
Fined 5/- and 4/- costs.

4th Nov. ,, ,, G. HOWARD, Hadleigh, ditto.
Fined 10/- including costs.

15th Nov. ,, J. NOAKES, Leigh, ditto.
Fined 5/- and 4/- costs.

(The above Prosecutions were all taken under the Byelaws relating to removal
of offensive matter.) (Sec. 26 Public Health Amendment Act, 1890.)

Sanitary Inspection.

Nuisances.

Several complaints were made direct to me, and in most cases were referred to the Inspectors. In some cases, however, I personally inspected the alleged nuisances. In February, I was verbally consulted by the Borough Engineer, as to raising the level of a road at Southchurch by means of house refuse. I strongly objected to the same, particularly if there was any intention of building houses alongside. In April, however, I received more than one complaint as to a nuisance being caused by the deposit of such refuse in a road leading off the Southchurch Beach Road. I visited the spot, and found the deposit undoubtedly objectionable. I accordingly wrote to and interviewed the Surveyor, with the result that the nuisance was forthwith abated.

Systematic Inspections.

In addition to other inspections, I made 25 systematic inspections in the course of the year.

In the course of a systematic inspection in February, in St. John's Parish, I inspected a bakehouse in Marine Parade, the occupier being an Italian. I found the bakehouse generally not clean, an untrapped sink in the bakehouse, and a refuse bin placed on top of a butter tub. I also saw a cat in the bakehouse. At my instance, Inspector Penn served the necessary notices, and interviewed the proprietor, and these matters were remedied.

In the course of a systematic inspection in March, I directed the attention of the Inspector to several ill-kept backyards with fowl roosts, in Burnaby Road and Beresford Road ; also to the condition of Underwood's Yard, which was unpaved and unclean, with evidences of gross carelessness in connection with the stables.

In the course of a systematic inspection in St. Alban's Parish in April, I found a dirty water closet without a flushing cistern, and directed the Inspector to serve the necessary notice. The matter was remedied. In the course of further inspection in this district, in May, I found the premises at 68, Balmoral Road in a dirty condition, and instructed the Inspector to serve a notice on the owner. The house was cleansed.

In May, in All Saint's Parish, some piggeries in connection with Floral Cottages, Sutton Road, were found in a very dirty condition. The Inspector was instructed to serve the necessary notice, and to keep the premises under frequent inspection. The premises were cleansed.

In August, when making a systematic inspection of the western part of the Borough, in St. Mary's Parish, I found some overflowing cesspools, and directed the Inspector to serve the necessary notices. The nuisance was remedied, but is liable to recur until a sewer is laid.

In October, in the course of a systematic inspection in All Saints' Parish, I called the attention of the Inspector to objectionable collections of manure on a small triangular piece of ground, at the junction of Coleman Street and Sutton Street. The nuisance was abated.

In October, when making a systematic inspection in St. John's Parish, in company with the Chief Inspector, I drew his attention to the unclean and insanitary condition of the path and yard adjoining Underwood's stables, which I had previously commented upon in April. I found Albert Square, however, much improved. Albert Square is a courtyard, surrounded by timber houses, which in a densely populated neighbourhood I should probably condemn. Under present circumstances however, I have no evidence whatever against it as being more unhealthy than any other spot in the Parish. The people, houses, and common courtyard, were cleaner than when I inspected this district in 1903.

In making a systematic inspection in the Sea View Estate, St. Mary's Parish, in December, I found Butt's cesspool out of use,

the houses in Beach Road now draining into the new sewer. A disused well, which I had on a previous occasion drawn the attention of the Inspector to, is now filled in.

Reference to other inspections of a systematic nature will be found under Cowsheds, Farms, Bakehouses and Schools.

I have in the previous paragraphs alluded to some special inspections. The following tables prepared by Mr. Whur, the Chief Inspector, state in tabular form, as far as possible, the large amount of work carried out by the Inspectors during the year.

It will be noted that 2,177 houses were inspected, and 105 houses re-drained, and that 2,208 inspections were made during the testing of drains and abatement of nuisances. 1,154 inspections were made in connection with infectious diseases, infantile deaths, deaths from cancer and tuberculosis ; school absentees, and smallpox contacts.

137 visits were made to slaughter houses, 360 to bakehouses, 61 to cowsheds, 448 to dairies and milk shops, 65 to fish shops, 135 to fruit shops, 346 to provision shops, 198 to refreshment houses, and 772 to work shops.

ANNUAL SUMMARY, 1904.

Complaints received and attended to	...	...	123
Frivolous complaints	...	...	4
Nuisances detected without complaint	...	...	564
Nuisances abated on notice	...	...	422
Nuisances abated without notice	...	...	241
Number of notices served	...	...	446
Notices not carried out but being dealt with	...	...	24
Houses affected by notices	...	...	570
Houses inspected	...	...	2,177
Premises closed as unfit for habitation	...	...	7
Houses cleansed	...	...	4
Rooms cleansed	...	...	17
Rooms measured as to over-crowding	...	...	3
Sanitary Certificates granted	...	...	31

AS TO TESTING OF HOUSE DRAINS :

Number of house drains tested	...	...	...	84
Houses re-drained	...	...	...	105
Total length of drains re-laid and tested with water			feet	5,342
Inspections during testing of drains and abatement of nuisances	...	...	...	4,218
Soil pipes tested and re-tested	...	...	...	209
New intercepting traps fixed	...	...	...	37
New inspection chambers provided...	...	...	...	69
New yard gullies fixed	...	...	...	78
Vent pipes unblocked	...	...	...	3
Blocked drains cleared on notice	...	...	...	67
Blocked drains cleared by Health Department...	...	...	...	4
Old houses, drains connected to sewer	...	...	...	10
Water laid on to w.c.'s	...	...	...	25
New flushing cisterns provided	...	...	...	30
Defective flushing cisterns repaired	...	...	...	30
Dirty closet basins cleansed	...	...	...	17
W.c.'s cleansed and lime-whitened	...	...	...	3
New w.c. erected	...	...	...	1
Improved ventilation to w.c.	...	...	...	1
W.c.'s floors paved	...	...	...	26
New closet basins fixed...	...	...	...	64
Sink wastes trapped	...	...	...	14
New sink wastes fixed	...	...	...	20
Defective sink wastes repaired	...	...	...	11
Sink wastes disconnected from drains	...	...	...	6
Rain water pipes disconnected from drains	...	...	...	5
New stone ware sinks fixed	...	...	...	9
Container closets condemned	...	...	...	6
Iron lip traps condemned	...	...	...	5
Brick ash-pits condemned	...	...	...	2
Use of pail closets discontinued	...	...	...	22
Old houses connected to Water Company's mains	...	...	...	2
Improved water supply...	...	...	...	2
Defective roofs repaired...	...	...	...	13
Defective guttering repaired, houses	...	...	...	9
Yards paved or re-paved	...	...	...	31
Back passages made-up, houses	...	...	...	10
Schools, inspections	...	...	...	39
Schools, drains tested	...	...	...	3
Stables, paving repaired	...	...	...	4
Stables drained	...	...	...	1
New manure pits provided	...	...	...	3
Manure pits rendered and drained	...	...	...	4
Animals improperly kept, removed...	...	...	...	9

Animals buried by Health Department	...	...	13
Dead horses removed, on notice	...	...	4
Inspections of public-house urinals...	...	...	92
Public-house urinals cleansed	...	...	12
Public-house urinals repaired	...	...	2
New sanitary ash-bins provided	...	...	100
Visits to cesspools	...	...	62
Cesspools filled in	...	...	9
Ditch cleansed	...	...	1
Visits to gipsies	...	...	15
Inspections, marine store dealers' yards	...	...	35
Notices <i>re</i> removal of manure, Section 49, Public Health Act, 1875	...	...	48
Manure removed and charged on owners	...	...	loads 4
Smoke observations	...	...	98
Enquiries <i>re</i> infectious diseases	...	...	206
Enquiries for Medical Officer of Health	...	...	555
Enquiries, infantile deaths	...	...	174
Enquiries <i>re</i> school absentees	...	...	171
Enquiries <i>re</i> small-pox contacts	...	...	48
Inspections with Medical Officer of Health	...	...	40

WORK DONE IN CONNECTION WITH REMOVAL OF PATIENTS
TO HOSPITAL:

Number of houses disinfected, rooms	...	...	350
Schools disinfected	...	...	8
Patients removed to Sanatorium	...	...	99
Patient removed to Small-pox Hospital	...	...	1
Visits to Small-pox Hospital	...	...	33
Articles removed from houses for disinfection	...	...	2,844

GOODS DISINFECTED, 1904:

Beds and mattresses	...	228	Dressing gowns	...	38
Bolsters	...	104	Jackets and corsets	...	19
Pillows	...	283	Stockings	...	pairs 30
Sheets	...	187	Toilet Covers	...	136
Blankets	...	283	Handkerchiefs	...	14
Overlays	...	36	Boots	...	pairs 17
Counterpanes	...	118	Skirts	...	39
Hearth rugs	...	30	Towels	...	110
Valences	...	64	Knickers	...	pairs 23
Bodices	...	33	Coats and drawers	...	19
Pants	...	pairs 26	Dresses	...	90
Carpets	...	17	Mats	...	55
Blinds	...	15	Trousers	...	pairs 24
Corsets	...	pairs 7	Curtains	...	35
Bed hangings	...	18	Aprons	...	25

Slippers ...	...	pairs	8	Cushions...	...	...	29
Overcoats	...	...	16	Bags	...	...	26
Hats	...	...	8	Books	...	...	23
Shawls	...	...	5	Cot beds	...	...	4
Shirts	...	...	8	Gloves...	...	pairs	3
Pieces of carpet and miscellaneous articles	...	...	...	...	...	...	591

TOTAL ARTICLES DISINFECTED ... 2,844

Fish shops, inspections ...	...	...	...	65
Fruit shops, inspections	...	...	...	135
Butchers' shops, inspections	...	...	...	81
Provision shops, inspections	...	...	...	346
Refreshment houses, inspections	...	...	...	198

SAMPLES TAKEN AND SUBMITTED FOR ANALYSIS :

Water	...	...	...	4	
Milk	...	...	...	3	TOTAL ... 7

FOOD SEIZED AND CONDEMNED :

Kippers	...	...	... boxes	10
Sardines	...	...	... tin	1
Shrimps	...	...	... gallon	1
Gooseberries	...	...	... peck	1
Brussels sprouts	...	...	... bushels	2
Brine	...	...	... tub	1
Sheeps' lungs	...	...	...	4
Sheep's liver	...	...	...	1

DAIRIES :

Dairies on Register, December 31st, 1904	...	...	...	34
New applications for registration	...	...	...	5
New applications granted	...	...	...	4
Re-registration on change of occupiers	...	...	...	4
Dairies discontinued as such	...	...	...	5
Dairy closed as unsatisfactory	...	...	...	1
New dairies erected	...	...	...	3
Dairy improved	...	...	...	1
Dairies measured as to cubic space, lighting, and ventilation	...	...	...	28
Dairies, inspections	...	...	...	448
Notices served on occupiers	...	...	...	22
Shops where milk is sold other than dairies	...	...	...	68
Occupiers discontinued selling milk	...	...	...	4
Visits to above shops	...	...	...	144

COWSHEDS :

Cowsheds on Register	...	...	...	4
Applications for registration	...	...	...	0

Cowshed that was being dealt with in 1903 Report has now been discontinued	...	...	...	0
Notices served on occupiers	...	...	...	2
Cowsheds, inspections	...	...	...	61

BAKEHOUSES :

Bakehouses on Register...	...	...	...	32
New bakehouse added to Register	...	...	...	1
Bakehouses measured as to cubic space	...	...	...	2
Notices served on occupiers	...	...	...	6
Underground bakehouses licensed	...	...	...	3
Unsatisfactory bakehouse being dealt with	...	...	...	1
Old, underground bakehouse closed...	...	...	...	1
One new underground place, used as a bakehouse contrary to the Factory and Workshops Act, discontinued	...	...	...	1
Bakehouses, inspections	...	...	...	360

SLAUGHTER HOUSES :

Slaughter houses on Register	...	...	...	7
Notice served on occupier	...	...	...	1
Slaughter houses, inspections	...	...	...	137
Killing in unlicensed premises, discovered	...	...	...	1

WORKSHOPS ON REGISTER :

Bakehouses	...	...	29	
Laundries	...	...	12	
Domestic workshops	...	...	8	
Other Workshops	...	...	58	TOTAL ... 107
Total inspections under the Act	...	...	...	772
Number of factories under the Inspector of Home Office	...	...	...	40
Circular letters sent by Medical Officer of Health to Employers of Labour <i>re</i> out-workers	...	...	...	48
Communications received from Employers of Labour	...	...	...	9
Notices received from Home Office <i>re</i> new workshops or change of occupants	...	...	...	13
Nuisances detected by H. M. Inspector of Factories and reported to Medical Officer of Health	...	...	...	0
Communications received from Medical Officers of Health for other districts <i>re</i> out-workers in district	...	...	...	0
Communications to Chief Inspector of Factories <i>re</i> other matters...	...	...	...	1
Lists of out-workers received from employers	...	...	...	3
Number of out-workers	...	...	...	4
Visits to out-workers' premises	...	...	...	4
Workshops measured as to cubic space, lighting, and ventilation	...	...	...	10
Workshops, including bakehouses, lime-whitened	...	...	...	72
Notices served to abate nuisances	...	10	...	
Notices served to abate nuisances in bakehouses	...	...	6	TOTAL ... 16
Inspection of work-places	...	...	...	198

THE FOLLOWING NUISANCES WERE ABATED UNDER THE ACT :

Want of cleanliness	...	...	...	...	9
Want of ventilation	...	...	...	...	1
Over-crowding	...	...	...	...	3
Other nuisances	...	...	...	...	1
Sanitary accommodation—Insufficient		...	...	...	1
„ „ Unsuitable or defective		...	...	...	6
„ „ Illegal occupation	...	...	...	...	1
Failure to affix abstract under the Factory and Workshops					
Act, but since complied with	...	...	...	...	7

BOROUGH ENGINEER'S AND SURVEYOR'S DEPARTMENT :

Number of houses connected to public sewer	...	...	824
Number of houses connected to cesspools	...	...	27
Number of earth closets	..	...	5
Number of houses in course of erection	...	...	507
Number of habitation certificates applied for	...	...	907
Habitation certificates granted	...	...	851
Number of habitation certificates deferred	...	..	56
Length of sewers laid by Estate Owners	...	feet	13,196
Length of sewers laid by the Corporation	...	feet	16,092
Cost of emptying cesspools, not recoverable	...	...	£280

Meteorological Notes, 1904.

JANUARY was a wet month, rain falling on 18 days, according to the record of the Southend Water Works Company, and on 15 days according to the Borough Meteorological Station. The total rainfall for the month was 2·22 inches at the Water Works, and 2·16 at the Cliffs Station. 59½ hours of sunshine were registered during the month. On 18 days the wind was southerly, on 8 days northerly, on 2 days due east, and on 3 days due west.

The maximum shade temperature was 52° F., and the maximum solar temperature 75° F., both on the 14th.

The minimum was 26° F. on the 22nd and 23rd. The wettest day was the 30th with a rainfall of 0·39 inches.

On the whole the barometric readings were high—but on the 12th the barometric pressure fell to 29·20.

FEBRUARY had 14 wet days, snow falling on the 28th and 29th. The total rainfall for the month was 1·90 inches at the Water Works and 1·71 inches at the Cliffs. 78 hours of sunshine were registered during the month. On 15 days the wind was southerly, on 9 days northerly, on 3 days due west, on 2 days due east.

The maximum shade temperature was 49° F. on the 5th. The maximum solar temperature was 82° F. on the same date.

The minimum shade temperature was 27° F. on the 28th and 29th.

The wettest day was the 9th with a rainfall of 0·32 inches. The barometric readings were low during the month, the minimum being 28·75 on the 16th.

MARCH had 12 wet days with a total rainfall of 1.36 inches at the Water Works or 1.34 inches at the Cliffs. The wettest day was the 2nd with a rainfall of 0.38 inches. The maximum shade temperature was 54° F. on the 19th. The maximum solar temperature was 89° F. on the 8th and 24th.

The minimum temperature was 26° F. on the 17th.

The wind was northerly on 16 days, southerly on 7 days, due east 3 days, and due west 4 days.

111 $\frac{3}{4}$ hours of sunshine were recorded during the month. The lowest barometer reading was 29.25 on the 29th.

APRIL was a dry bright month, rain falling only on 6 days. The wettest day was the 12th, with a fall of 0.3 inches. The total rainfall for the month was 0.58 inches at the Water Works, or 0.48 at the Cliffs (only 4 days rain recorded at the Borough Station).

The highest shade temperature was 62° F. on the 14th and 20th. The maximum solar temperature was 100° F. on the 20th.

The minimum temperature was 35° F. on the 25th and 26th.

There were 185 hours of sunshine during the month, 12 $\frac{1}{2}$ hours being recorded on the 20th.

The atmospheric pressure was fairly uniform throughout the month, the lowest barometric reading being 29.40 on the 12th.

Southerly winds prevailed on 11 days, northerly on 8 days. The wind was due east on 1 day, and due west on 10 days.

MAY was on the whole a dull month with 15 wet days, with a total rainfall of 1.65 inches at the Water Works and 0.23 inches at the Cliffs. The wettest day was the 31st with 0.24 inches of rain. A bright week in the middle of the month broke the monotony of gloom, 84 hours of sunshine being recorded between the 13th and the 20th. The total sunshine recorded for the month was 179 $\frac{3}{4}$ hours. The maximum shade temperature was 71° F. on the

26th and the 29th. On the latter date the solar maximum temperature of 113° F. was attained, The minimum temperature was 35° F. on the 8th. The ground temperature at a depth of 1 foot stood at 60° F. during the last four days of the month.

Southerly winds prevailed on 14 days, northerly on 9 days, due west on 3 days, due east on 4 days.

JUNE was a pleasant, bright, but not a hot month. Rain fell on 8 days with a total rainfall of $1\frac{1}{2}$ inches recorded at the Water Works, and 0.95 at the Meteorological Station on the Cliffs. The wettest day was the 9th with a fall of 0.37 inches. On the same day, however, at least 6 hours of sunshine were recorded.

The highest shade temperature recorded was 72° F. on the 17th, 23rd and 24th. The highest solar temperature was 115° F. on the 23rd. The lowest temperature was 45° F. on the 4th and 25th. From the 13th to the end of the month, the ground temperature exceeded 60° F. at a depth of 1 ft., reaching 66° F. on the 30th.

Northerly winds prevailed on 14 days, southerly on 12 days ; the wind being due east on 2 days, and due west on 2 days.

$246\frac{1}{4}$ hours of sunshine were recorded during the month. The brightest day was the 29th, with 14 hours of recorded sunshine. On the 1st and 11th, no sunshine was recorded.

JULY was a bright and pleasantly warm month. Rain fell on 8 days, the wettest day being the 27th, when 1.19 inches were measured at the Cliffs, and 1.60 inches at the Southend Water Works in Cambridge Road. The total rainfall for the month was 2.11 inches at the Cliffs, or 2.74 inches at the Water Works.

The highest shade temperature recorded was 82° F. on the 15th. The same day, a maximum solar temperature of 122° F. was noted. The lowest temperature recorded during the month was 50° F. on the 3rd.

The ground temperature, at a depth of 1 foot, exceeded 60° F. during the whole month, while from the 13th to the 28th, it registered over 70° F.

The wind was southerly on 18 days, northerly on 5 days, due west on 4 days, and due east on 4 days.

The barometer was steady, and averaged high readings during the month, the extremes being 30.25 on the 9th and 29.55 on the 25th.

279 $\frac{3}{4}$ hours of bright sunshine were recorded during the month, the brightest day being the 17th, with 14 hours of recorded sunshine.

AUGUST was a bright and warm month, but only on 2 days, the 3rd and 4th, did the maximum shade temperature exceed 80° F. The highest record was 87° F. on the 4th. The lowest shade temperature was 46° F. on the 23rd and 24th.

With the exception of the 24th, the ground temperature, at a depth of 1 foot, exceeded 60° F. during the month, but the ground temperature did not range so high as in July, exceeding 70° F. only on 6 days.

The maximum shade temperature recorded was 120° F. on the 4th.

Rain fell on 7 days in the month, but on every day, except the 31st, some sunshine was recorded.

The wettest day was the 22nd, when 0.60 inches of rain were recorded. The total rainfall for the month was 1.80 inches at the Water Works, and 1.83 inches at the Cliffs.

The wind was southerly on 15 days, northerly on 9 days, due east on five days, and due west on 2 days.

The total of sunshine recorded was 316 $\frac{3}{4}$ hours during the month, 13 $\frac{1}{2}$ hours being registered on the 3rd.

SEPTEMBER opened dull, but pleasant weather prevailed during the greater part of the month. Rain fell on 11 days, but the rainfall was small, only 0.79 inches being recorded at the Cliffs, and 0.98 inches at the Water Works during the month. The wettest day was the 6th, when 0.23 inches were recorded. The

total sunshine for the month recorded over $175\frac{1}{2}$ hours. Some sunshine was recorded on every day, except the 1st and 8th, 12 hours being recorded on the 4th and 5th. The maximum solar temperature was 109.2 on the 5th.

The maximum shade temperature was 74° F. on the 5th. The minimum was 42° F. on the 29th.

After the 7th, the ground temperature at 1 foot, did not exceed 60.0 F., except the 16th, 17th and 18th.

Southerly winds prevailed on 10 days, northerly on 9 days, due east on 6 days, and due west on 3 days.

OCTOBER. Rain fell on 12 days, as compared with 19 days in 1903. The total rainfall for the month registered 2.04 inches at the Waterworks and 1.85 inches at the Cliffs.

The wettest day was the 6th, when 0.81 inches fell.

$109\frac{3}{4}$ hours of sunshine were recorded during the month. Nine days were sunless, and the day of maximum sunshine was the 28th, with 9 hours.

The barometer was high and steady between the 8th and the 15th, and again during the last week of the month.

The maximum temperature recorded was 67° F. on the 19th. The minimum was 35° F. on the 8th.

The wind was southerly on 8 days, northerly on 12 days, due west 7 days, due east 3 days.

NOVEMBER had a comparatively low rainfall, rain falling only on 9 days. 1.06 inches were registered at the Cliffs, and 0.92 inches at the Water Works. The day of greatest rainfall was the 10th, with 0.38 inches. From the 11th to the 30th a period of dry weather was experienced. From the 20th to the 27th a sharp spell of cold prevailed, a minimum temperature of 25° F. being recorded on the 22nd, 25th, and 26th. The maximum temperature recorded was 57° F. on the 5th and 12th.

97 $\frac{1}{4}$ hours of sunshine were recorded during 19 days of the month, 8 hours being recorded on the 15th. Southerly winds prevailed on 14 days, northerly on 9 days. On 7 days the wind was due west.

DECEMBER was one of the wettest months of the year. Rain fell on 10 days, measuring 2'14 at the Cliffs and 1'45 at the Water Works. The wettest day was the 5th, when 0'71 inches fell. Southerly winds prevailed on 19 days, northerly winds only on 7 days, west winds on 3 days, east on 2 days. On the whole December was a milder month than November, but a minimum temperature of 23° F. was recorded on the 21st, the shortest day of the year. The maximum temperature was 55° F. on the 29th.

General Summary.

The year 1904 on the whole was a dry one, only 18'76 inches being registered at the Water Works, and only 17'73 inches at the Cliffs, the average annual rainfall for the previous 13 years being 20'16 inches.

January, July, and December were the months of greatest rainfall, but January had the largest number of rainy days. Rain fell on 130 days during the year. The largest rainfall in one day of twenty-four hours occurred on July 27th, when 1'60 inches were recorded at the Southend Water Works.

The driest month was April. Rain fell only on 6 days in the month, with a total rainfall of 0'58 inches.

Southerly winds prevailed on 161 days, northerly on 115 days, while on 51 days the wind was due west and on 35 days due east.



METEOROLOGICAL READINGS, 1904.

THERMOMETRIC READINGS.

[illegible]

TABLE I.
Vital Statistics of Whole District during 1904
and previous Years.

YEAR.	Popula- tion estimated to Middle of each Year.	BIRTHS.		TOTAL DEATHS REGISTERED IN THE DISTRICT.				Total Deaths in Public Institutions in the District.	Deaths of Non-residents registered in Public Insti- tutions in the District.	Deaths of Residents regis- tered in Public Institutions beyond the District.	NETT DEATHS AT ALL AGES BELONGING TO THE DISTRICT.	
		Num- ber.	Rate.*	Under 1 Year of Age.		At all Ages.					Num- ber.	Rate.*
				Num- ber.	Rate per 1,000 Births registered	Num- ber.	Rate.*					
1	2	3	4	5	6	7	8	9	10	11	12	13
1894	15,407	365	23·69	51	139·61	204	13·24	18	14	6	196	12·72
1895	16,203	426	26·29	49	115·02	263	16·2	21	26	5	242	14·93
1896	17,529	474	27·04	74	147·67	295	16·8	20	25	6	276	15·74
1897	19,302	553	28·65	88	159·15	262	15·12	21	24	8	246	12·81
1898	22,583	603	26·70	103	170·81	350	15·49	34	39	18	329	14·56
1899	24,710	657	26·58	121	184·17	400	16·1	23	29	13	384	15·54
1900	27,721	739	26·62	135	182·40	416	14·64	34	37	21	400	14·44
1901	29,793	781	26·21	140	179·25	507	17·01	55	23	28	502	16·84
1902	33,537	839	25·01	84	100·11	439	13·09	53	22	29	440	13·29
1903	37,283	935	25·07	111	118·71	448	12·01	33	22	17	443	11·88
Aver- ages for years 1894- 1903.	24,406	637	26·10	95	149·69	358	14·87	31	26	15	346	14·27
1904	41,944	1007	24·01	180	178·74	592	14·11	35	26	30	596	14·20

* Rates in Columns 4, 8 and 13, calculated per 1,000 of estimated population.

I. Institutions within the District receiving sick and infirm persons from outside the District.	II. Institutions outside the District receiving sick and infirm persons from the District.	III. Other Institutions, the deaths in which have been distributed among the several localities in the District.
St. Mary's Convent, St. Albans Nazareth House, All Saints The Glen, St. John's	Rochford Union Workhouse	The Borough Sanatorium The Victoria Hospital Private Nursing Institutions (The above also occasionally re- ceive sick and infirm persons from outside the District.)

Area of District in Acres (Exclusive of area covered by Water)) 5,172	Total Population of all ages	28,857	} At Census of 1901
		No. of Inhabited Houses	5,417	
		Average No. of Persons per House	5·3	

TABLE III.

Cases of Infectious Disease notified during the year 1904.

NOTIFIABLE DISEASES.	CASES NOTIFIED IN WHOLE DISTRICT.							TOTAL CASES NOTIFIED IN EACH LOCALITY.					NO. OF CASES REMOVED TO HOSPITAL FROM EACH LOCALITY.				
	At all Ages.	Under 1	1-5	5-15	15-25	25-65	65 and upwards.	1	2	3	4	5	1	2	3	4	5
Smallpox ...	1					1		1					1				
Cholera ...																	
Diphtheria ..	{ 72	12	45	p2*	7	8		22	10	26	12	2	10	5	20	4	1
	{ p4*					p2*			p2*	p1*	p1*			p2*		p1*	
Membranous Group	1	1									1						
Erysipelas ...	22		2		3	16	1	10	1	4	6	1					
Scarlet Fever	50	10	36		2	2		7	4	17	12	10	6	3	15	6	10
Typhus Fever																	
Enteric Fever	{ 15		3	p1*	3	9		5	3	5		2	4	3	2		2
	{ p3*					p2*		p1*	p1*			p1*	p1*	p1*			p1*
Relapsing Fever ..																	
Continued Fever ...																	
Puerperal Fever ...																	
Plague ...																	
TOTALS ..	161	23	86	p3*	15	36	1	45	18	52	31	15	21	11	37	10	13
	p7*					p4*		p1*	p3*	p1*	p1*	p1*	p1*	p3*		p1*	p1*

In addition 4 notifications of diphtheria, and 3 notifications of enteric fever were subsequently withdrawn as indicated by p*.
 One case of scarlet fever and 1 case of erysipelas were respectively notified by two doctors each.

TABLE IV.

Causes of, and Ages at, Death during Year 1904.

CAUSES OF DEATH.	DEATHS AT THE SUBJOINED AGES OF RESIDENTS WHETHER OCCURRING IN OR BEYOND THE DISTRICT.							DEATHS OF ALL AGES OF RESIDENTS BELONGING TO LOCALITIES, WHETHER OCCURRING IN OR BEYOND DISTRICT.					Total Deaths in Public Institu- tions in the District
	All Ages.	Under 1 year.	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and up- wards.	PRITTEWELL.				South- church	
								St. John's	St. Mary's	St. Albans	All Saints		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Smallpox ...	..	...	...	...	...	...	...	...	...	...	...	...	...
Measles ...	3	...	3	...	...	...	...	...	...	1	1	1	...
Scarlet Fever ...	...	...	...	...	...	...	...	...	...	...	...	...	...
Whooping Cough ...	5	4	1	...	...	...	...	2	1	1	1	...	...
Diphtheria and Membranous Group ...	2	...	2	...	...	...	...	1	...	...	1	...	...
Croup ...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fever { Typhus Enteric Other continued	...	...	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	1	...	1	..	...	1	1	...	...	1

Epidemic Influenza ...	2	...	...	...	...	...	2	1	...	...	1	...	...
Cholera ...	...	...	...	...	...	...	..	...	...	...	...	...	...
Plague ...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diarrhoea ...	84	68	13	...	...	3	1	19	11	12	34	8	...
Enteritis ..	18	12	2	...	...	2	2	8	3	2	2	3	1
Puerperal Fever ...	...	...	...	...	...	...	...	...	...	...	...	...	...

Phthisis (Pulmonary Tuberculosis)	50	...	2	1	14	31	2	18	9	8	9	6	1
Other Tubercular Diseases ...	21	8	9	2	1	1	...	7	2	5	6	1	2
Cancer, Malignant Disease	30	...	...	1	...	21	8	11	3	8	7	1	2
Bronchitis	38	7	3	...	...	12	16	13	5	8	7	5	2
Pneumonia	18	5	4	...	...	7	2	5	3	4	6	...	2
Pleurisy ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...
Other Diseases of Respiratory Organs ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...
Alcoholism	15	...	...	...	...	12	3	7	1	4	2	1	...
Cirrhosis of Liver }						...	...	...	...	...	...	1	...
Venereal Diseases ...	2	2	...	...	...	...	...	...	...	...	1	1	...
Premature Birth	29	28	1	...	...	...	...	6	6	4	12	1	...
Diseases and Accidents of Parturition ...	6	1	...	...	...	...	...	1	3	1	1	...	...
Heart Diseases	50	1	...	2	1	29	17	18	11	10	10	1	1
Accidents	9	...	4	1	1	2	1	4	5	...	...	...	7
Suicides	6	...	...	...	...	6	...	4	1	...	...	1	1
Found Dead	3	1	...	...	...	1	1	2	...	...	1	...	...
All other causes	200	43	7	1	7	58	84	72	41	41	30	16	15
All causes	596	180	51	10	24	192	139	199	108	111	132	46	35

NOTE.—In this Table all Deaths of “Residents” occurring in Public Institutions, whether within or without the District, are included with the other Deaths in Columns 2-8 and 9-13. Deaths of Non-residents occurring in Public Institutions in the District are in like manner excluded.

In recording the facts under the headings of Tables I, III and IV, attention has been given to the notes on the forms supplied by the Local Government Board.

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